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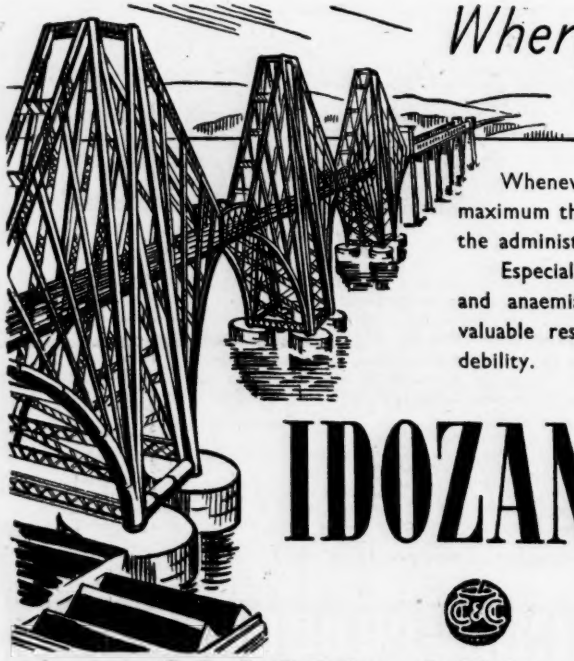

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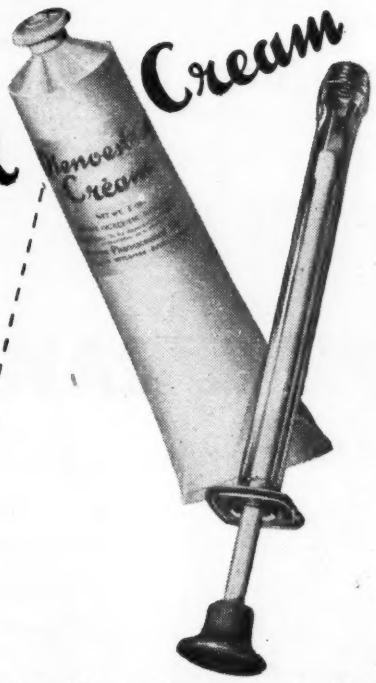

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★ *C. M. McLane, Amer. J. Obst. & Gyn. Vol. 57, 5 pp.* 1018—1019, *May* 1949.

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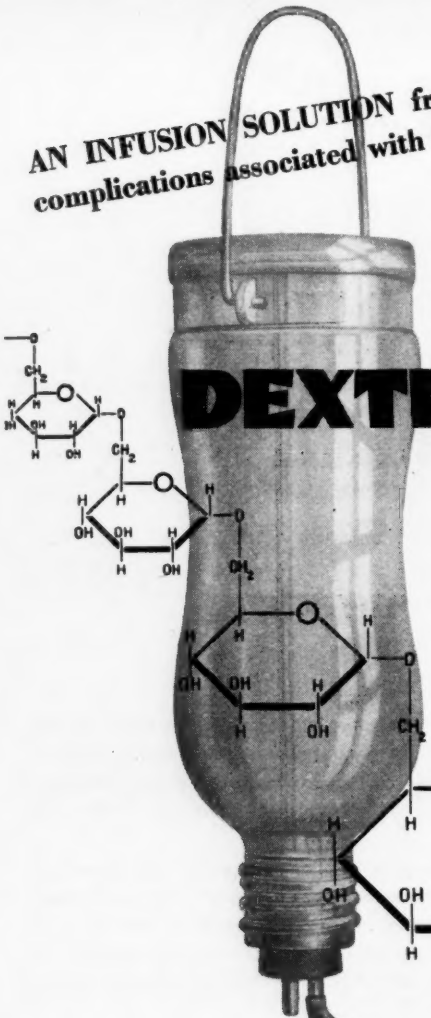

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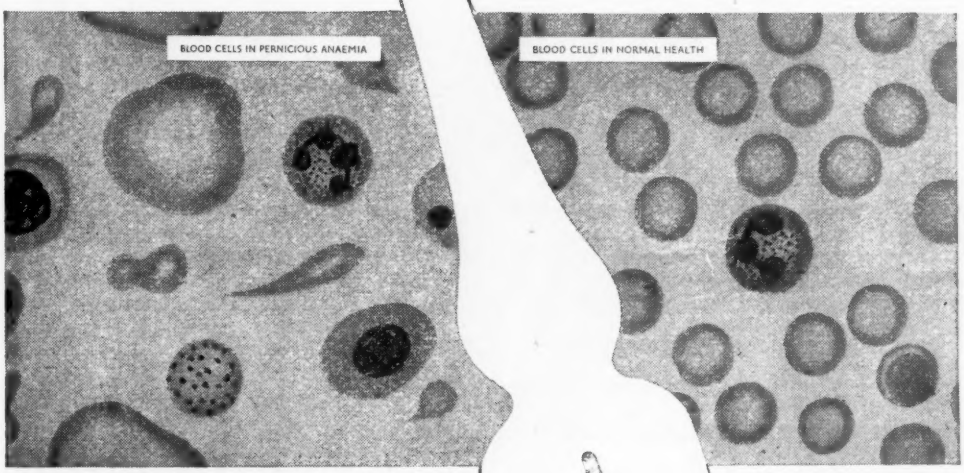

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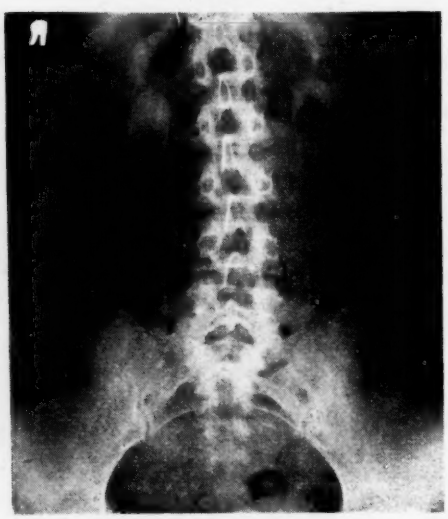

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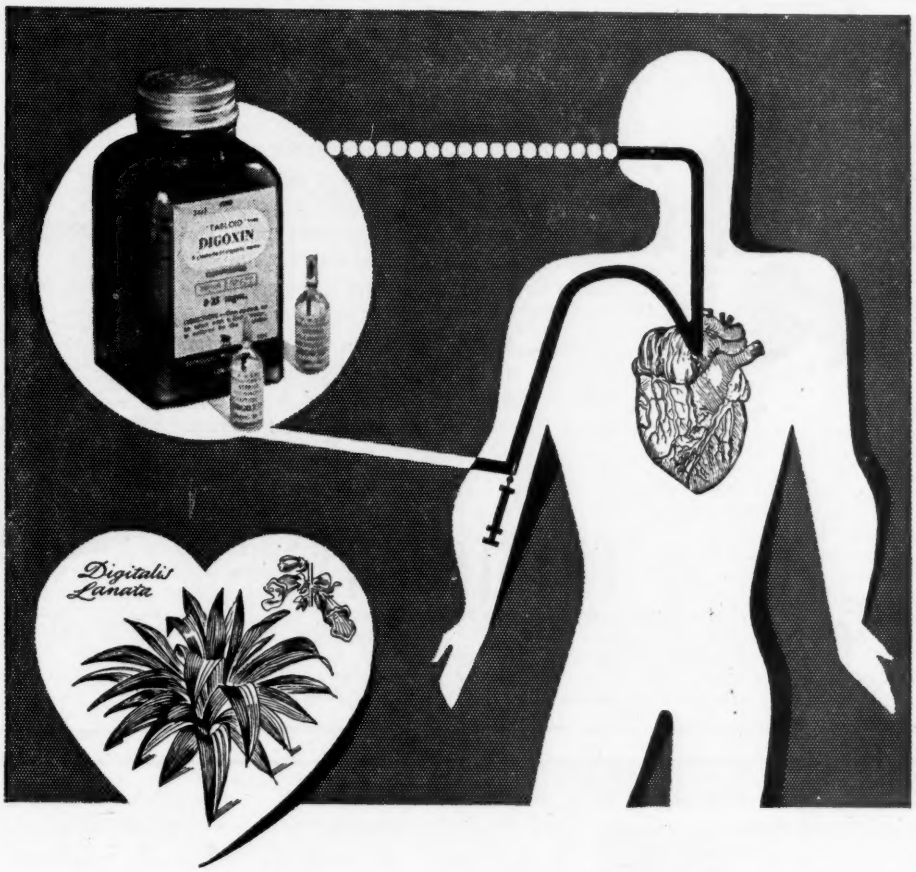

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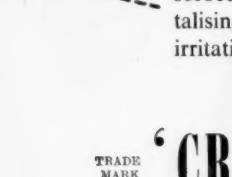

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STUDY OF DELINQUENCY *

D. H. STOTT
M.A. Camb., Ph.D. Lond.

I SHALL take as my theme: What contribution has contemporary psychology to make to the prevention of delinquency and the cure of delinquents?

It is well to review first how much the psychologist and the knowledge at his disposal *is* used. As regards prevention the answer is quite simply: Hardly at all. Neither the public nor the State have yet begun seriously to deal with the child in his pre-delinquent phases. Public concern is limited to punishing him when he dares to force his unhappiness upon us.

Quite unnecessarily we allow unhappy children to remain unhappy, either because we are insensitive to the signs, or regard them as mere naughtiness or as just part of a child's nature. At present the school-teacher, for instance, who is in the best possible position to spot the unhappy child and potential delinquent, receives no training in how to do so.

Quite unnecessarily also we allow children to remain, year in year out, in human situations so deleterious that their only defence against insanity is to eschew all sentiment and all affection, and to develop that lack of finer feeling and loyalty which is misnamed "moral defect." When such types become delinquent society is up against a tough problem.

What is worse, through ignorance and our own insensitivity we are manufacturing criminals, *putting* children in situations where there is a reasonable prospect of their developing into immoral types. Our knowledge about how criminals are made has only been available in recent years, and for the most part has not yet got through to the administrator, the social worker, the magistrate or the legislator. For example, in allowing the parent to bring his child to court as "beyond control" we provide the machinery for the child's being rejected, and lend substance to the anxiety-creating threat of "putting away."

SHORTCOMINGS OF THE ADMINISTRATOR

My observation of the large number of adolescent delinquents who had passed their childhoods in institutions has made me spend some time recently in examining what happens to them there.[1] I found that, for administrative convenience, it is quite a general practice for parentless children to be raised in a residential nursery until they are three, and in a toddler's home until five, at which age they are transferred to a home for children of school-age. The five-year-old, in so far as it has had mother-figures at all, has had at least three different ones. It has been taught by bitter experience never to attach itself deeply to anyone. This is what the matron of a toddlers' home said to me:

> "Nursery children are altogether different from other children, they are always on the defensive; they never give, they take. It is a long time before they will play properly with other children, they are more self-contained. It takes a long time to get underneath a nursery child; they don't trust you."

I have heard a very sincere Children's Officer suggest that a difficult child should be placed with a good foster-mother, for *a few* months only, until he settled down, and then be removed from her—as if his difficult behaviour was merely a question of getting him accustomed to a regular daily routine. Again, it is current practice, owing to the shortage of space in Children's Homes and owing to legalistic ideas as to the parent's primary responsibility irrespective of the good of the child, to try to force unsuitable and unwilling mothers to have their children back again.

Let me quote no very extraordinary example of a problem which all housing authorities have to face. It is of a family of bad rentpayers who had been twice evicted, and refused further council accommodation on that account. Man, wife, and four children were forced to live in one small room which had been allowed them by a charitable acquaintance. No attempt to rehabilitate the family was made. Authority took the view that it was their fault; they were made to stew in their own juice, and the result was that one of these children and two others of the family who were forced to live elsewhere became delinquent.

SHORTCOMINGS OF THE PSYCHOLOGIST

I do not want to lay the blame for the manufacturing of criminals upon our public administrators. They have no doctrine to work upon, and so the good and the evil that they do is a matter of chance—the chance that any particular officer is a humanly feeling person in a human mood, who is not overwhelmed by other administrative pressures. It is rather the fault of the psychologist that he has not yet properly expounded or popularised recent knowledge about the effect of the human environment upon character; nor have we embodied it in a procedure which the administrator and social practitioner can utilise. We must evolve procedures which are just as much an inescapable routine as a medical examination, and which would make the failure to consider the emotional situation of a child just as reprehensible a dereliction of duty as subjecting a child to physical hardship. I shall therefore lay my chief emphasis upon this subject of procedures for studying human beings and human relations.

In the main, these techniques are not yet in existence. The traditional psychiatric examination, at the best, discovers nothing that the most ordinary inquiry into the behaviour of the patient would not reveal, and at the worst is the subject of justifiable ridicule by those who have to read, and are expected to act, upon its findings. I have in mind a case where a Children's Department is nonplussed by the report of two clinicians upon a boy, one of whom described him, correctly, as highly disturbed, the other as perfectly normal. The point about a consulting-room interview is that whereas it *might* be revealing, there is no guarantee that it will be so. The child is seen in only one mood, and in only one situation. Nor do I believe that any projection-technique, however valuable for giving hints as to essential attitudes, can ever be a substitute for the direct study of actual behaviour. And the more remote any specimen, consulting-room behaviour is from the usual range of a person's activities, the bigger the chance that it will be unrepresentative, and the greater the need to prove that the test means what it is meant to mean. The procedure of direct observation has these drawbacks to a greatly lesser degree: as I hope to show later it is easier to interpret behaviour in real life than in artificial situations.

Since, therefore, it is likely that a lot of work will be done in the next few years on techniques of observation, and, as I hear, similar work is being started in America, I should like to say something about the principles governing such techniques.

CHARACTER-TRAIT OR SITUATION-ATTITUDE?

The first thing to be clearly recognised is that the concept of the character-trait does not correspond with reality. The old schedules asked the observer to state whether a child was "coöperative or uncoöperative," "cheerful or depressed," "lazy or hardworking," as if

* An address to the British Psychological Society on July 8.

1. Stott, D. H. Delinquency and Human Nature. Obtainable from the Carnegie United Kingdom Trust, Dunfermline, Fife. 5s. or $1, post free.

he was one or the other of such alternatives at all times to all people. In the course of my study of boys in approved schools I did draw up such a schedule of traits so that I could discuss each boy with his housemaster and instructors. I was astonished to find what different opinions were forthcoming. To one man a boy was endowed with all the virtues, to another with all the vices. This was not in the main due to the well-known halo-phenomenon of personal judgments—the tendency to paint people we like white and those we dislike black; these lads did behave differently to different people, they did act as the saints or the sinners that they were painted.

In the end I had to scrap the whole schedule of trait-assessments; instead I began to study variations in behaviour according to the type of situation. "A," I noticed, was a delightful personality so long as he did not have to obey an order. "B" was a fine craftsman, except that when in a bad mood he could not make the simplest measurement. One might say in general that *the response varied according as any given situation did or did not offer the prospect of satisfying a basic psychic need.* And the quality of the reaction depends upon the expectation of fulfilment which the person has come to have as a result of his experience of previous, somewhat similar situations. This may sound rather theoretical; but rather more simply, one might say that people develop habits of reaction, or attitudes to situations of a certain type. People with largely unhappy human experiences tend to assume that everyone will betray, cheat, desert or rebuff them—hence a pervasive attitude of misanthropy which looks like a trait of character. But some of my boys would mistrust women more than men, and vice versa; some would mistrust all adults but display a desperate loyalty to their fellows. These complications can be embraced by the concept of the situation-attitude but not by that of the trait, the bankruptcy of the latter concept, incidentally, being no better seen than in Allport's refinements which postulate the capacity of traits to die, to be born again, to metamorphose themselves or to come into activity or not for reasons of their own—the which acts as a warning not in our turn to elevate the situation-attitude into a kind of little internal bogy-man. It is merely a conative habit, and, I believe, obeys the laws of habits.

This view of the situation-attitude as a habit has important bearings, which I shall mention later, upon treatment. Also, if one has studied the way a person tends to act in various types of situation, one is in a position to help him choose those situations which bring out the better side of his nature, or advise those who have the care of him in arranging for his future, shall we say, upon his licence from an approved school. And when it is realised how much a person's emotional health depends on the situations he meets, one sees how dangerous it is to make a prognosis in the abstract. This type of prognosis, which incidentally often does tremendous harm by discouraging people from persevering with a disturbed child, is seen, like most of the current notions about so-called mental disease, as a concept recklessly borrowed from physical medicine.

For observational purposes I think the best way of preventing the concept of the situation-attitude from developing into another mystical and ultimate thing-in-itself is to regard it merely as the summation of a number of bits of behaviour—bits of behaviour, however, which are classified according to a theory; that is to say, which have been selected in the light of what we know about the general potentiality for feeling and reacting that human beings possess. It is a question, then, of collecting the samples of behaviour which will enable us to make these inferences of situation-attitude. The blind recording of behaviour, it cannot be too plainly stated, without any theory as a guide to significance, is likely to result in triviality and to be of little use for diagnostic purposes.

By way of illustrating what I mean by this inference of situation-attitude, or in other words the interpretation of behaviour, may I take the case of a five-year-old institution-reared girl who was described by the staff as "aggressive"—a beloved word of child-welfare people which can mean practically anything. This is how the house-mother described her tempers: "She will go up into the bathroom and throw things out of the door one by one, slamming the door in between each article and saying 'I don't like nobody here.' She is better than she was. She used to say, 'I don't like nobody in this home. I only like myself.'" The aggressiveness, thus seen in terms of actual events, reveals itself as an attitude of violent rejection. When I inquired about the same child's reaction to endearments the house-mother said: "She likes to be kissed when she goes to bed. You can't kiss her at any odd time. She wouldn't *come* for a kiss or a hug, but when in a good mood she will make no objection; in a bad mood she will shake herself free." One sees another aspect of the rejection and affection-shyness. How pervasive this attitude was becoming, even in a child of five, is revealed in what would once have been described as a trait of contrariness and obstinacy. She would not only reject affection in itself, but the kindly ministrations of adults in all forms. "At one time—to quote the house-mother again—if we were to ask her if she liked a certain thing, she would say 'No' as a matter of policy." Although a child of good appetite, she made a gesture of pushing away food, saying: "Take it away, I hate that stuff." And (quoting again) "Sometimes you will find her stark naked by her bed saying 'I don't know what to put on' and tossing her clothes about. If we say 'Put your vest on,' she replies 'I don't know what my vest is.'"

My point, in summary, is that these samples of behaviour tend to interpret each other. Viewed together, they enable the clinician not only to diagnose an attitude, but to estimate its strength, its consistency, and the degree of its spread or projection over a range of situations—to what extent, in short, it becomes a dominant pattern of reaction. And above all, the clinician has an objective measure of the child's progress. Much of the behaviour just quoted belonged to the first few months of the child's stay in the institution. The fact that the gestures of rejection were gradually being discontinued meant that she was learning to accept the affection of the house-mother and her staff, in other words the treatment was being successful.

A GUIDE TO OBSERVATION

It is now time to refer to the "Guide to Child Observation" which I have prepared. Its full title is "Guide to Child Observation (Children in Institutions, 5–15 years)" and the following is an extract, taken from the part of the section "Attitudes to Staff" which is most relevant to the behaviour of the five-year-old girl quoted above:

Affection.—Accepts and gives affection freely/always "coming for love"/demonstrative ("all over" people)/pretends indifference or independence/refuses affection avoids any intimacy.

Friendliness.—Friendly, natural/unresponsive (cold, deep, "you don't know how to take him"), cannot show appreciation ("takes things for granted.")

Confidence.—Talkative/quiet. Forward (opens conversation, tires people with constant chatter)/shy, aloof (does not make the first approach)/suspicious ("on the defensive').

This guide was evolved from a series of discussions which I held with house-mothers and house-fathers and their assistants—taking 20 children, spending an afternoon on each, and making notes upon the kind of things each child did, upon the way it behaved to the staff

and to other children, how it played games, treated its possessions, and so on. The schedule gradually took on its present shape as a result of successive draftings, but it has yet to be seen how the staff of a home can use it independently. You will notice that general "blanket" descriptions are avoided as far as possible. Phrases like: "Tempers, bullying, nervousness" are used by people to describe astonishingly different kinds of behaviour. Tempers may refer to explosive inferiority-reactions, or to gestures of rejection; bullying can be more domineering and assertiveness, or a real desire to hurt; nervousness a tendency to compulsive movements, or high fears. While avoiding these popular clichés the schedule must be framed in language that the non-technician can follow; it is a question of selecting such expressions as will conjure up the image of a child *actually behaving in a certain way*.

It may be thought that for the use of institution staff this schedule is too complicated. But a picture of a personality, to be of value, must be a comprehensive one. And if all these queries are not laid out in black and white, the clinician would have to waste time and energy to putting them all by word of mouth, with the additional risk of leaving something out and so of not eliciting certain crucial facts. Also, once a member of a staff gets used to the schedule, he or she should be able to run through it quickly in respect of a particular child. Most important of all, familiarity with a guide such as this acts as a training in observation. On many occasions a house-mother or house-father has said, even as regards nail-biting: "He may do, I couldn't be sure. I must watch him."

For each category of person and situation separate guides would have to be drawn up by the study of sample groups. For instance it would be of tremendous interest to have one for children up to three years old. We would want another for children of five to fifteen living in their own homes (such, in a rough-and-ready way, as I developed for the systematisation of the home-information in my study of boys in approved schools); and yet others for the study of parents and prospective foster-parents.

Only by taking separate schedules for each category of person can one go into the kind of detail that will begin to yield really significant results. For example, my factors [2] J 3 and J 4, "Father or Mother lacking in, or inconsistent in, Affection" are obviously inadequate to embrace all the inconsistencies, conflicts of attitude, guilty displays of over-affection, insincere mouthings of fondness, deep affection which cannot express itself, and so on, that one finds in real live parents. My difficulty was, of course, to keep the whole life-history of the boy, his present array of situation-attitudes, and the characters of his parents within manageable proportions in one statistical summary. The original sheets actually had 256 factors, or over half as many again. Nevertheless, despite its inadequacy, it occurred to me that other clinicians might like to work on a similar schedule, both with delinquent and non-delinquent cases. It would also be extremely interesting to see to what extent a random sample of ordinary youths tend to conform to the same reaction-patterns or, alternatively, fail to score. Consequently I have had a number of blanks prepared, which I shall be pleased to supply to anyone who thinks of doing similar experimental work.

DATA FOR STATISTICAL ANALYSIS

I have so far stressed the practical need for these systematised observations—their use, that is to say, for diagnosis and for counsel. Their theoretical utility must be even plainer. Some acts and utterances lend themselves to easy interpretation, as instance the so-called aggressiveness of the five-year-old girl which I took as an example. But the inner or unconscious purpose of some behaviour is not at all obvious. Is bedwetting a symptom of a general anxiety, as sometimes assumed, or is it associated with a particular kind of unsatisfactory mother-relationship? Is a lack of care for his appearance in a boy more often associated with nervous exhaustion, an indifference for the regard of others, a mood of going to the dogs, or an unconscious desire to annoy his parents? These questions can only be answered by the application of statistical techniques—which means that the variables must be defined with a reasonable objectivity. Once we can reduce our study of personality to quantitative terms, we should be able, if we can keep the mastery of our statistical steed, to advance to new certainties about human nature.

THE PSYCHOLOGIST'S TASK

Perhaps it is time I returned to my subject. To summarise the psychologist's rôle in the prevention of delinquency, it is to provide a routine for deciding what a child is like, and what kind of things he may be expected to do next; further, to sharpen the observation of those who have to do with children, so that the unhappy ones, the potential delinquents, can be spotted at an early stage; and finally to make the public, and parents in particular, and our administrators more particularly still, sensitive to the emotional needs of children.

The other side of the psychologist's work is the treatment, both of the pre-delinquent and of the already delinquent. Here our record is anything but a bright one, and it will not be letting the side down to be frank about the present state of things. It is better that criticism should be voiced by psychologists among psychologists, than by those who doubt the value of psychology. And whether it be Sir Leo Page [3] or I who draws attention to our weaknesses, it matters little, because all those who use our existing psychological services are only too well aware of them.

Just a week or two back a club leader told me how he had for some two years been taking a personal interest in an artistically gifted club member of his, who was very unsettled. The probation officer advised him to seek the advice of a well-known clinic. After a single interview with the lad the clinician refused to see him again: it was too bad a case! In another case recently reported to me, the clinician, a supposed specialist in delinquency, rejected a delinquent boy, again after one interview, because he was uncoöperative. These instances reveal a fundamentally wrong view of treatment. One cannot expect every young delinquent to lie on a couch and spew up his innermost thoughts. We must recognise the fact that some delinquents are awkward people. Imagine what would be said of a family doctor who refused to treat a patient because he did not respond to his one and only prescription. A refusal to treat, or a picking and choosing of our patients, will only damage our reputation among the magistrates, the club leaders, or school teachers who are enlightened and humanitarian enough to refer a child for psychological advice.

Our essential error is that treatment is too clinic-centred; there is a danger of developing a cult around the mystic belief that by some process of turning the patient emotionally inside out he will receive an inner cleaning—a process which, apart from its very dubious value, needs so many scores or even hundreds of interviews as to be quite irrelevant for our present delinquency problem. There is of course a place for the giving of insight by some outsider who stands apart from the world with which the lad has embroiled himself. It was

2. In the statistical summary attached to Delinquency and Human Nature (ref. 1).

3. Page, L. The Young Lag. London, 1950. See *Lancet*, 1950, i, 1080.

suggested above that bad human attitudes are by their nature habits of reaction; and the cure of a bad habit depends upon two things, insight into the habit and the wish to be cured. But the delinquent's bad attitudes are false attempts at adjustment, his way of mitigating his inner distress. He fears to face life and emotion in a normal way, because the pain of renewed failure would be more than he can bear. And so he clings to his antagonisms, his immorality, his cynicism and his attention-filling diversions. Mere reason or mere insight will not avail against the bitterness of his life experiences.

The first task of the psychotherapist is to give him a new confidence in human relationships. Good human experiences must be provided which will counteract the previous bad ones. Of course the patient will resist, and distrust and test to the uttermost the sincerity of the friendship which is offered him. If furthermore it is offered carelessly, with too many blandishments, he will flee from it like a terrified animal. The drawing of a deeply withdrawn person into a fellowship-group must be a carefully supervised process, and carried out by people who are aware of what they are doing. It is the psychologist's job to direct this process of recall to normal human feeling. Without this every other device of therapy is useless. No-one would think of trying to revive a drowning man with his face still in the water.

It is apparent, also, that this approach to treatment pre-supposes an accurate diagnostic technique, not only to gauge the depth of the delinquent's false adjustment, but for the appraisal of his contemporary human situation. For example the therapist will have to judge whether his family life can be improved by the sympathetic intervention of an outsider, or whether it is emotionally so impossible that the patient must be transferred to an entirely new human environment. In any case, it is a question of tactics—a mutual improving of people's attitudes to each other, the removing of the barriers of pride which uphold antagonisms, the giving of insight and education in human relations in doses that can be absorbed. This is quite another thing from the mechanical weekly clinical interview which is sometimes called treatment. None of the clinicians to whom I have known approved-school boys referred have ever asked for consultations with the staff as to the boys' person-attitudes; nor, astonishingly enough, have they thought of seeking information as to their family situation. The treatment was an isolated weekly occurrence, to be weighed against the occurrences of every other hour of the week which the clinician ignored. The influence of that one hour, in terms of happy human experience, is of particularly little consequence with the type of delinquent who has a knack of creating bad situations against himself.

A NEW TYPE OF SOCIAL PRACTITIONER?

There is a further consideration regarding our psychological services: the kind of treatment which our new emphasis upon human relations involves makes one wonder if the present division of labour between psychiatric social worker, educational psychologist, and psychiatrist is a fruitful one. Can a written or even a verbal report of any reasonable length communicate from the one to the other the detailed evidence of what is wrong with a human situation? At any rate, to be adequate it must involve an enormous amount of time and drudgery, and a second-hand report lacks the vividness of personal and sometimes incommunicable experience. I feel that a new type of social practitioner must be developed, with the individual responsibility for a case like that of the general medical practitioner, who sees what is wrong and acts upon it himself.

One of the defects of our present clinical service is that there is no responsibility for success or failure. No-one seems to mind if the treatment fails; perhaps no-one expects it to succeed. It is well for us that no modern Molière is at hand. The present tendency to flee competition and the test of results is a neurotic one. If the medical practitioner is not afraid to let his reputation hang upon his devotion to his work and upon his successes, why should not his brother the psychotherapist accept a similar challenge?

Finally, it is apparent that case-investigation of the type outlined is patient, time-consuming work, to be carried out by specially trained people. The evidence of emotional ill health is perhaps more elusive than that of physical disease, and so the investigation and treatment of each case will on the average be more expensive. Can society afford it? Let us review the debit and credit items on the balance sheet. On the one side there may be, say, a whole month of a professional person's time; on the other the expense of a whole delinquent, neurotic, or psychotic lifetime on public charge. Say £60 against many thousands. It seems a fairly safe investment. In physical medicine no-one queries the necessary expense of a long case; we recognise, at least in principle, that physical suffering and human life are above mere financial considerations. Why should we then begrudge the expense when a lifetime's happiness, and perhaps the happiness of succeeding generations, is at stake? But before we press these points we must convince the public that the psychologist can deliver the goods. It is no use, for example, asking the school to spot the unsettled child at an early stage unless there exist the competent family advisers to deal with the case effectively.

CONCLUSION

It may be felt that I have not spoken as specifically about the study of delinquency as I might have done. But persistent delinquency in its irrational, undeterrable, breakdown stage can be defined as a neurosis of a type which gives some point to lawbreaking. Essentially the same types of reaction are, I believe, to be found in not formally delinquent neurosis. The study of the one is largely the study of the other, and the same exact methods of observation are needed for both.

To many psychologists my remarks will sound too sweeping. What can happen in one clinic would be impossible in another. It is no new doctrine, in the progressive clinic, that therapy must be directed not only upon the difficult child but upon his family. And I am but one of a number of psychologists who are trying to think things out afresh in terms of human relations. It is owing to the youth of our science that it still suffers from ideas and methods which have been borrowed from physical medicine. In dragging the inadequacies of our old-fashioned brethren into the limelight my intention has been mainly to show to what extent this new approach requires an overhauling of psychological practice and different types of professional training.

". . . Benefits in the form of a service have this further characteristic that the rights of the citizen cannot be precisely defined. The qualitative element is too great. A modicum of legally enforceable rights may be granted, but what matters to the citizen is the superstructure of legitimate expectations. It may be fairly easy to enable every child below a certain age to spend the required number of hours in school. It is much harder to satisfy the legitimate expectation that the education should be given by trained teachers in classes of moderate size. It may be possible for every citizen who wishes it to be registered with a doctor. It is much harder to ensure that his ailments will be properly cared for. And so we find that legislation, instead of being the decisive step that puts policy into immediate effect, acquires more and more the character of a declaration of policy that it is hoped to put into effect some day."—Prof. T. H. MARSHALL, Citizenship & Social Class. Cambridge, 1950; p. 58.

SUPPURATIVE PNEUMONIA*

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With illustrations on plate

(*Concluded from p. 554*)

Non-specific Suppurative Pneumonia

In this lecture I wish to give an account of chronic non-specific suppurative pneumonia. In describing the development of non-specific suppurative pneumonia I have put forward the view that there is a whole range of aspiration pneumonias of varying severity in which suppuration occurs. One type when first observed presents as a solitary abscess cavity with little surrounding pneumonia; another as a predominantly pneumonic process in which large or small abscesses may develop. The importance of recognising the type which begins as a solitary abscess is that as long as it remains solitary and is not complicated by surrounding suppurative changes in the lung, it may sometimes be treated successfully by surgical drainage. Once it has become complicated and the disease consists no longer of a solitary abscess, then its progression cannot be distinguished clinically from that of the type which is mainly pneumonic from the beginning. What is more, their prognosis and treatment are the same, and I do not believe that it is useful to attempt their separation.

To this chronic phase of pulmonary suppuration many names have been applied—among others, aputrid abscess, necrosuppurative pneumonia, and spreading suppurative pneumonitis. It may simply and correctly be called chronic lung abscess; but this has the disadvantage that not all cases which may legitimately be included in the group have begun as abscesses, and in some cases abscesses may never have been recognised clinically or radiologically at any time. This, I am sure, leads in practice to confusion of thought rather than clarity, because when such cases are seen the observer frequently fails to regard them as examples of pulmonary suppuration; and he tends to place them in, and to think of them as, some quite separate disease entity, not amenable to the same lines of treatment.

Because of this, I think the term chronic non-specific suppurative pneumonia is a useful one. The condition as it presents itself to the physician is characterised by the long-standing production of purulent sputum which has a mixed and often varying flora; and in the lungs areas of pneumonic consolidation are found, often associated with abscess cavities. In fact, the name is simply a description of the disease as seen; and, as long as the user is clear that it is a comprehensive term and in no way separate from chronic lung abscess, it is a satisfactory one in practice.

INCIDENCE

Some idea of the incidence of chronic non-specific suppurative pneumonia may be gathered from the numbers treated as inpatients at the Brompton Hospital. In 1946 there were 23 out of a total of nearly 1400 inpatients. It is perhaps easier to appreciate that 23 cases is quite an important group when it is made clear that the total number of non-tuberculous cases treated in the same year was approximately 600. For the years 1947 and 1948 similar figures obtain; approximately 1 in 30 of patients in this hospital suffering from non-tuberculous disease have chronic pulmonary suppuration of this type.

The sex-distribution shows a considerable preponderance of males over females. The number of patients of both sexes treated in the Brompton Hospital in three years is given in table I, which also shows the patients' age-distribution. The disease is seen at all ages throughout adult life; but there is, in this group at any rate, a somewhat larger incidence in the fifth decade of life.

From this group of 57 cases, I selected 28 in which the course of the disease had been followed long enough to make possible a study of the clinical features of the disease. I propose also to compare certain of the clinical data of these 28 cases with those of a further 25 under the care of Mr. Andrew Logan and myself in a military thoracic unit in the Middle East in 1941–45 (Logan and Nicholson 1949).

TABLE I.—SEX-DISTRIBUTION AND AGE-INCIDENCE OF CHRONIC NON-SPECIFIC SUPPURATIVE PNEUMONIA AT THE BROMPTON HOSPITAL DURING 1946–48

Sex-distribution

Year	No. of cases	
	Men	Women
1946	18	5
1947	10	3
1948	16	5

Age-incidence

—	Age (years)				
	20–30	30–40	40–50	50–60	60–
No. of patients ..	10	12	22	8	5

ÆTIOLOGY

In 19 of the 28 cases treated in the Brompton Hospital, it was possible to find a cause for the pulmonary suppuration:

Factors	*No. of cases*
Dental sepsis	7
Extraction of teeth	2
Operation under general anæsthesia	2
Chronic bronchitis	5
Others	3
None found	9
	28

Of the 7 patients with dental sepsis, 5 had gingivitis and 2 necrotic stumps. Of the 2 patients with a history of operation under general anæsthesia before the onset, 1 had been operated on for perforated gastric ulcer and the other had undergone thyroidectomy; in each case the patient had dental sepsis. In 1 patient the pulmonary suppuration followed the giving of thiopentone for a psychological investigation; in another it followed prolonged sea-bathing; and in a third, who came from Poland after the war, it was perhaps related to poor nutrition. There was also a group of 5 cases in which the suppuration followed long-standing bronchitis in which there was cough and the expectoration of small amounts of mucoid sputum. In the remaining 9 cases no ætiological factor was found.

ONSET

The great majority of the patients seen at the Brompton Hospital were not sent there until the disease had been present for some time, and it was seldom possible to get any clear idea of the mode of onset. All the Middle East group were in some form of military service and were accordingly sent to hospital early in the illness. Of the total of 25, all except 3 had radiographs taken early enough to demonstrate the original distribution of the lesions. In 5 of these patients the radiographs showed a cavity within three weeks of the onset; and in these patients the illness began acutely with cough, profuse

* The Goulstonian lectures for 1950, delivered at the Royal College of Physicians on Jan. 10 and 12.

sputum, and pain in the chest—the onset typical of an acute solitary lung abscess. There were 10 further cases in which the onset was acute with similar symptoms, but in which the lesion seemed to be pulmonary consolidation, and cavitation was not seen in the first three weeks. In the remaining 7 cases the onset was more gradual, consisting usually of cough and increasing fever; and evidence of pulmonary consolidation was found radiologically.

In all cases there was an initial febrile period which did not usually persist for more than a few weeks. Purulent sputum was coughed up from the onset in all cases in this group except 1, in which for the first four months only traces of mucopus were expectorated. In 13 instances in this group the sputum was described as offensive or fœtid at the onset.

CLINICAL COURSE

Clinically, the progress of the disease was similar in the two groups of cases. The fever at the onset settled, but was followed by repeated febrile periods, lasting usually a week or two, and often associated with a reduction in sputum; in these episodes the temperature would reach 101°F or, rather infrequently, higher levels. Then, often after sudden expectoration of profuse sputum, or more gradual increase in its amount, the temperature would fall to normal. Between these attacks most patients in both groups were able to be up and about and often felt very well. In this connection it is interesting that of the 28 patients treated in the Brompton Hospital, no fewer than 12 had been ill for more than twelve months before being sent to the hospital. There is no doubt that the periods of relative well-being are dangerous to the patient, obscuring the fact that he still suffers from a serious disease.

In all cases, throughout the course of the disease cough was present and produced purulent sputum in amounts commonly between 2 oz. and 7 oz. daily. The amount of sputum brought up each day was in some cases very large. One of those seen in the Brompton Hospital had 30 oz. of sputum a day, and one of the Middle East patients brought up almost 2 pints of foul-smelling pus each day for four or five weeks. Fœtor of the sputum may come and go during the illness. In only 4 of the Middle East cases was the sputum non-fœtid throughout the period of observation, which ranged from three to twenty-one months, with an average of ten months. Of the Brompton Hospital group, 11 had non-fœtid sputum during their stay in hospital, which averaged just over three months. With longer observation the number might well have been smaller.

Hæmoptysis was observed quite often in both groups of patients. It was noted at the onset by 9 of the Brompton Hospital patients and by 3 of the other group as streaking of the sputum. In the majority, blood-streaked sputum was expectorated occasionally during the illness, and 4 patients had more substantial and repeated hæmoptyses, of which the largest seen amounted to 1 pint.

Clubbing of the fingers was seen in a very high proportion, but not in all. There were 2 patients in the military hospital group and 4 in the Brompton Hospital series who were not thought to have clubbing. Of the 23 patients in the military hospital group who showed finger-clubbing, 1 also had hypertrophic pulmonary osteo-arthropathy.

On physical examination of the chest, signs of pulmonary consolidation were present at some time in most of the cases; but these were seldom as gross as might have been expected from the radiological appearances, and they varied considerably during the disease.

White-cell counts were carried out frequently in both series of patients. It was unusual for these to be much raised. Counts of 10,000–12,000 per c.mm. were commonly seen; on only three occasions were counts of more than 20,000 per c.mm. recorded. In all cases the differential count showed approximately normal percentages.

Examination of the sputum was repeated many times in all these cases. In each, at least twelve sputum specimens were examined for tubercle bacilli and found to be negative. Also, at least one specimen was cultured for tubercle bacilli, and in no case was the bacillus grown. There is undoubtedly, however, an association between chronic non-specific suppurative pneumonia and pulmonary tuberculosis, which I shall discuss later. In each case examination for other organisms showed a mixed flora. I have already referred to the difficulty of establishing exact bacteriological diagnosis in these cases; and during the period over which they were observed the flora was found not only to be mixed but to vary from one week to the next. The organisms most commonly found were of the following types: *Streptococcus viridans*, hæmolytic streptococcus, non-hæmolytic streptococcus, pharyngeal neisseria, *Staphylococcus aureus*, pneumococcus, organisms of the hæmophilus group, occasionally diphtheroids, and occasionally Friedländer's bacillus (*Bacterium pneumoniæ*). It was never possible to relate the organisms found to the severity or course of the infective process.

Bronchoscopic examination of these patients under local anæsthesia is of great value; and in the two groups of patients which I am describing this was only rarely omitted—either because the patient was regarded as too ill, or because he was incapable of adequate coöperation. The information obtained was, first of all, of the absence of obstruction of the major bronchi, to the importance of which I shall refer again in discussing differential diagnosis; and, secondly, of the presence of redness and œdema of the mucous membrane of the bronchi associated with the affected areas, thus assisting in defining the position, and often the extent, of the affected part of the lung. Further, it was often possible to aspirate for examination some of the pus welling out of the affected bronchi. The advantage of examining this material for tubercle bacilli and other organisms before it is contaminated in the mouth is considerable; and more exact bacteriological information may eventually be obtained in this way.

RADIOLOGICAL FINDINGS

It is possible to follow the course of this disease only by repeated radiographs. From a study of those taken in the two series of cases from which I am drawing my data, I shall try to describe the more common ways in which the radiological appearances develop and progress. I have previously, in describing the onset of this condition, pointed out that 5 of the military hospital cases were characterised by the early formation of an abscess cavity and were at this stage undoubtedly examples of typical solitary abscess. Beginning in this way, the abscesses tend to occur most frequently in the posterior and axillary parts of the posterolateral segments of the upper lobes. A large proportion of these cases do not, however, show cavitation at the onset, but consolidation only. This is often segmental, but is not always confined to a single bronchopulmonary segment. Thus, in 22 cases in the military hospital group there was radiological evidence of the early distribution of the lesions. Of these, 7 showed involvement of a whole lobe and 1 of the whole of one lung; and in 2 there were pneumonic areas scattered throughout a lobe. However, in the remaining 12 cases the lesion was clearly segmental at the onset, whether or not the consolidation broke down early to form an abscess.

The subsequent radiological appearances were varied. The course most usually followed was that the disease spread apparently directly into the surrounding lung;

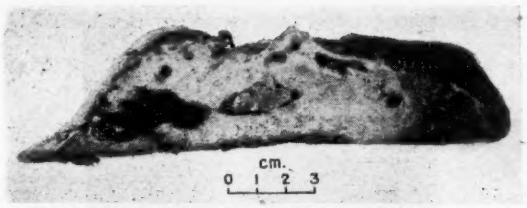

Fig. 22—Photograph of cut surface of left upper lobe showing extensive consolidation and cavitation.

this extension was not hindered by the interlobar septa. Besides this method of spread, there were a number of instances—7 in each of the series I have studied—where spread occurred to parts of the same lobe or lung which were not contiguous. In these circumstances it is, I think, reasonable to assume that the spread took place by aspiration of material from the affected part of the lung into the bronchi of fresh segments. In addition, there was 1 example in the military hospital group, and 2 in the Brompton Hospital series, of spread to the other side.

Cavitation may take place at any stage of the disease; it may develop early or late in the original lesion, and may sometimes disappear. The freshly invaded parts frequently cavitate, and it is not uncommon to have multiple cavities of varying size in the same lobe or lung. In the series studied the radiological appearance often remained stationary for two to three months, and this was commonly associated with clinical improvement. Sooner or later there was usually recrudescence of the symptoms, associated with radiological evidence of further spread of the disease.

In most cases there was at some time evidence of at any rate partial clearing of the pneumonic process. Where this happened, the lung showed radiological evidence of fibrosis. In the military hospital group there were 2, and in the Brompton Hospital series 7, cases in which the radiographs, after recurrent epi les of consolidation and cavitation, showed only evidence of fibrosis and distortion of the lung. This is a stage to which the term "burnt-out" is sometimes applied, the implication being that the danger is over. I am sure that this is not so; it is not uncommon to see the disease light up again in these cases, with recrudescence of the inflammatory process in the fibrotic area and spread to previously unaffected parts. When bronchograms are done in this stage of fibrosis they show distortion of the bronchial tree and bronchiectasis, which may be of any type. Bronchograms are of no value in the active phases of the disease because the iodised oil rarely enters the affected parts of the lung, the associated bronchi being then occluded by pus and pulmonary debris. Such importance as they have is in relation to the more quiet phases of the condition when the pulmonary changes are principally those of fibrosis; and then their main use is in deciding on treatment. I shall, therefore, refer to bronchography again when I come to treatment.

Fig. 23—Photomicrograph of part of wall of central cavity of specimen shown in fig. 22; its partial covering of epithelium can be seen.

EMPYEMA

In one of the military hospital cases, and also in one of the Brompton Hospital group, empyema developed. In both instances this happened quite late in the course of the disease—namely, one year and four years after the onset of the pulmonary suppuration. In both these cases the empyema occurred in a part of the pleural cavity remote from the original site of the disease. The development of the empyema was related to the spread of infection to a fresh area of the lung, where presumably the pleural layers had not previously been inflamed and were not adherent. In one there was a bronchial fistula into the empyema, but in the other no fistula was evident. Both cases were treated by drainage and they healed; the progress of the pulmonary suppuration was not affected.

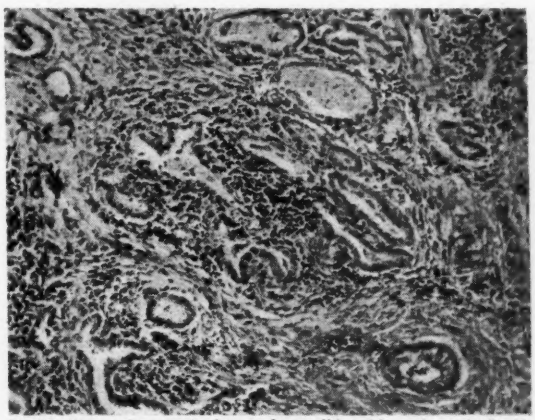

Fig. 24—Photomicrograph of part of consolidated lung shown in fig. 22. Fibrous tissue, collections of inflammatory cells, and alveolar areas lined with cubical cells can be seen. In upper part of photograph two groups of lipoid-filled macrophages are shown.

PATHOLOGICAL CHANGES

In 12 of the military hospital cases and in 13 of those treated at the Brompton Hospital, the diseased lung tissue was examined either post mortem or after its surgical resection. The naked-eye and microscopic features were the same in all cases, and were the same as those described in chronic lung abscess. The pleura covering the affected lung was thick and widely adherent to the wall of the thoracic cavity. The interlobar fissures were obliterated. The lung itself was mostly airless, but there were areas of emphysema. Abscess cavities of various sizes, often multiple, were seen in most of the specimens. Not uncommonly the cavities apparently extended across segmental boundaries. In some specimens dilated and distorted bronchi ringed with fibrous tissue were visible.

On histological examination the tissue showed a variety of appearances. The cavities were lined with granulation tissue, showing more or less advanced fibrosis and infiltration with plasma-cells and lymphocytes. In some there was a partial lining of columnar or squamous epithelium. The alveoli surrounding these abscess cavities were filled with exudate, which in some places was undergoing organisation and fibrosis. Groups of alveoli lined with cubical cells were seen, and there were

occasional abscess-like masses of polymorphs. Groups of fat-containing cells filling alveolar spaces were common, and presented an appearance like that seen in lipoid pneumonia. The bronchi were frequently distorted and dilated, and in some instances were distended and formed the walls of cavities. The walls of the bronchi in the affected parts of the specimens showed at some points complete necrosis, at others inflammatory infiltration, and at others fibrosis. Some of the features described in this section are shown in figs. 22–24.

ILLUSTRATIVE CASES

Before going on to consider the differential diagnosis and treatment, I should like to describe three cases by way of illustration.

The first example (case 2 of Logan and Nicholson (1949)) shows the effect of long-continued suppuration in the lung.

Case 9.—A Libyan Arab, aged 26, was admitted to hospital in June, 1942. Five months before, he had become ill with fever, cough, and sputum.

On admission, his general condition was fairly good; he was febrile to 101°F, and was coughing up 10 oz. of fœtid purulent sputum each day. His fingers were clubbed. Radiographic examination (fig. 25) showed a cavity in the right upper lobe, surrounded by consolidation and fibrosis, the transverse fissure being displaced upwards. Sputum examination showed the presence of a mixed flora with pneumococci predominating. Bronchoscopy, carried out shortly after his admission, showed the right main bronchus to be œdematous, with pus exuding from the upper-lobe bronchus.

For a month the patient improved clinically and his sputum diminished. Then he had an exacerbation, and sulphapyridine, 1 g. every four hours, was begun. He suffered no ill effects, and the chemotherapy was kept up for eighteen days. At the end of this long course he was greatly improved and had only 3 oz. of sputum each day. The clinical improvement was maintained, but radiographs six months after admission (fig. 26) showed that although the upper-lobe changes were mainly of fibrosis, there was a large pneumonic area in the right lower lobe. Two months after this the patient developed a right basal empyema. At this time the lower lobe contained a cavity with a fluid-level and much surrounding consolidation. The empyema was drained and healed.

After this the patient steadily improved. The radiographic appearance of his chest a year after admission is shown in fig. 27; there is considerable fibrosis throughout the right lung. He was then well and free from cough and sputum. Bronchograms (figs. 28 and 29) showed a distorted right bronchial tree with irregular cavities in communication with the bronchi of all lobes.

The second example is of less extensive disease without definite abscess formation and with a fairly satisfactory result after treatment.

Case 10.—A carpenter, aged 43, was admitted to the Brompton Hospital in September, 1946. For twenty years he had had a cough with a little mucoid sputum, and had been regarded as having chronic bronchitis. About three months before admission he had been taken ill with a pain in the right side of the chest, fever, and increased cough. After eight or nine days, his sputum had increased, and had become purulent and streaked with blood.

When admitted to hospital, he was febrile to 99°F and was coughing up 3–4 oz. of purulent, non-fœtid sputum. His fingers were clubbed, but abnormal physical signs were not detected on examination of his chest. The radiographs (figs. 30 and 31) showed consolidation, mainly in the posterolateral segment of the right upper lobe. Sputum examination showed a mixed flora, and *Strep. viridans*, micrococci, and a few colonies of hæmolytic streptococci were grown. Bronchoscopy revealed nothing abnormal apart from mild inflammatory changes at the right upper-lobe orifice. He was treated with postural coughing, and penicillin by intramuscular injection; clinically his condition improved, with reduction of sputum to less than $^1/_2$ oz. each day. The radiographic shadow diminished, but did not clear up completely.

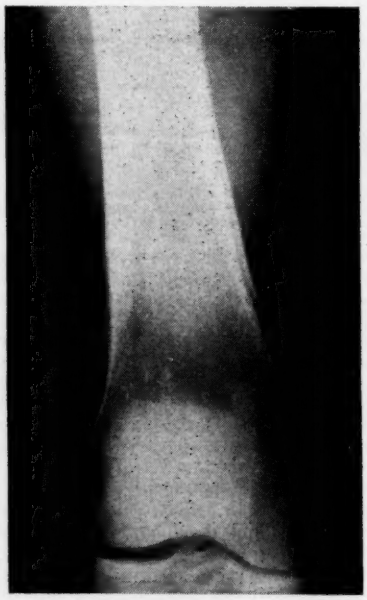

Fig. 34—(Case 11). Anteroposterior radiograph of right knee showing subperiosteal new bone.

He left hospital after a little more than a month; and in the next six months he had two exacerbations, with increase in sputum and in the pneumonic area in his right upper lobe. A radiograph (fig. 32) taken three months after his discharge from hospital shows the appearance of the lung in one of these exacerbations. After this his cough and sputum diminished steadily, and radiographs of his chest showed mainly linear shadows, attributed to fibrosis in the right upper lobe. A radiograph taken more than two years after his discharge is shown in fig. 33.

In the third case lobectomy was carried out.

Case 11.—The patient was a Greek soldier, aged 37, who was admitted to hospital in September, 1942. Ten months before, he had developed fever, cough, and profuse sputum, and a diagnosis of lung abscess had been made.

On admission, he was in good general condition and afebrile, but with a cough and 2 oz. of purulent, non-fœtid sputum each day. His greatest complaint was of pain in the knees and wrists. His fingers were clubbed, but abnormal physical signs were not detected in his chest. He had several septic roots in his upper jaw and his oral hygiene was poor. Radiographs of his wrists, ankles, and knees showed subperiosteal thickening; that of his right knee (fig. 34) demonstrates this new bone formation. Radiographs of his chest (figs. 35 and 36) showed consolidation in the left lower lobe, with more

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Fig. 25—(Case 9). Postero-anterior radiograph on admission showing abscess cavity in right upper lobe surrounded by consolidation and fibrosis.

Fig. 26—Same case. Postero-anterior radiograph six months after admission showing extension of pneumonia.

Fig. 27—Same case. Postero-anterior radiograph one year after admission showing fibrotic changes throughout the lung.

Figs. 28 and 29—Same case. Anteroposterior and oblique bronchograms one year after admission showing distorted right bronchial tree.

Figs. 30 and 31—(Case 10). Postero-anterior and right lateral radiographs showing consolidation in posterolateral segment of right upper lobe.

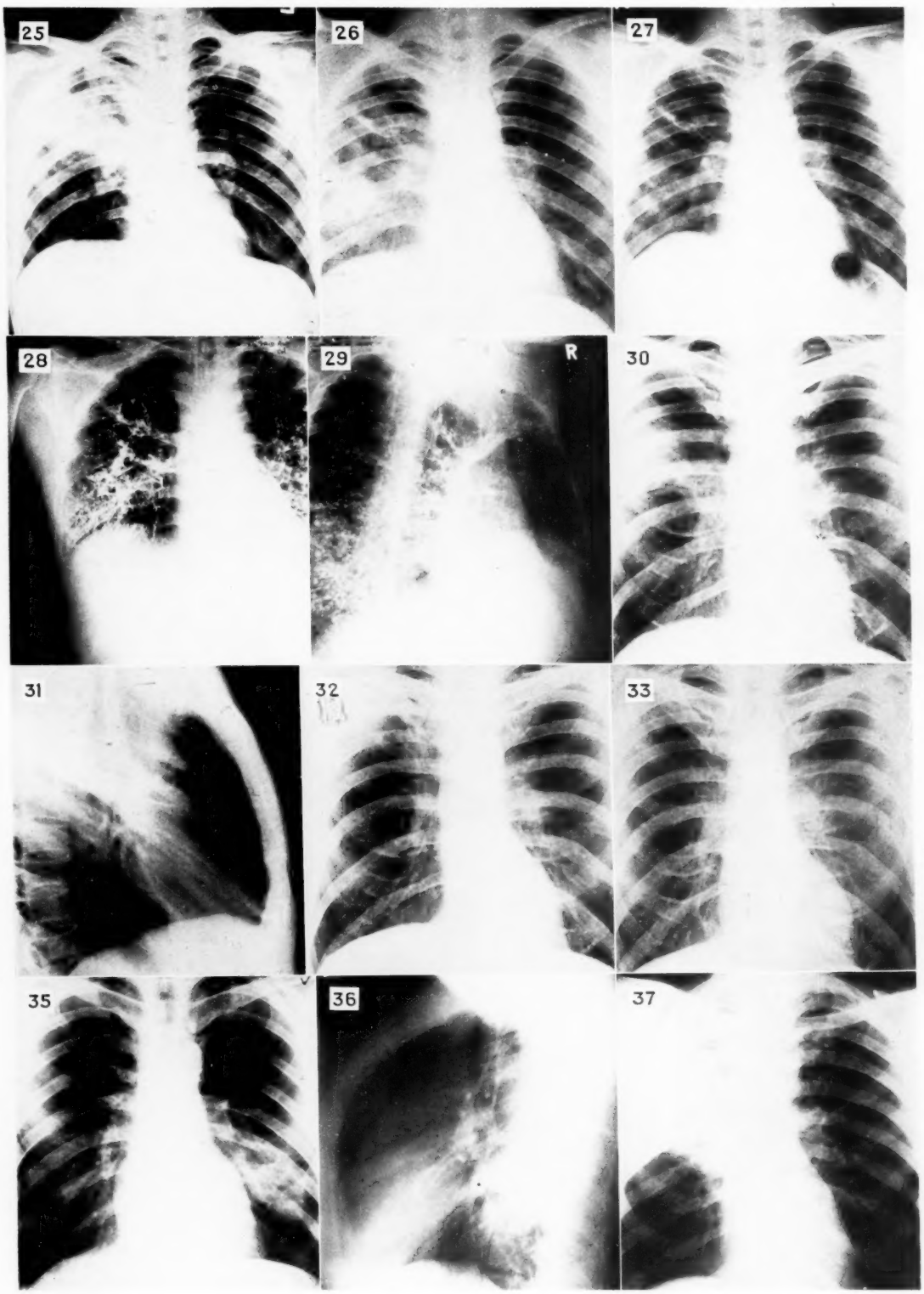
Fig. 32—Same case. Postero-anterior radiograph four months later showing fresh area of consolidation.

Fig. 33—Same case. Postero-anterior radiograph two years later showing fibrotic changes in right upper lobe.

Figs. 35 and 36—(Case 11). Postero-anterior and left lateral radiographs showing consolidation and cavitation in left lower lobe.

Figs. 37 and 38—(Case 12). Pulmonary tuberculosis and chronic suppurative pneumonia: postero-anterior and right lateral radiographs showing consolidation of most of right upper lobe.

DR. NICHOLSON: SUPPURATIVE PNEUMONIA



DR. NICHOLSON: SUPPURATIVE PNEUMONIA

DR. STOKER: Q FEVER IN GREAT BRITAIN

than one cavity. Bronchoscopy showed a normal bronchial tree, apart from the presence of pus in the left lower bronchus.

A few days after admission, two roots were removed, under local anæsthesia, from his upper jaw. Next day the patient had a rigor and became febrile to 103°F. His sputum increased and he became very ill, with a rigor every second day. This continued and was unaffected by a course of a sulphonamide. Other causes for his fever having been excluded, an attempt was made to drain the main pulmonary abscess. Rib-resection was carried out, but free pleura was opened. A firm lump, $2^1/_2$ in. in diameter, was found in the left lower lobe, with a narrow area of loosely adherent pleura over it. It was not thought justifiable to carry out the drainage, and the pleural cavity was closed. Over the two months after this operation, the fever gradually settled and the patient's general condition improved. The radiological appearance at the end of this time remained essentially unchanged. Fourteen months after the onset of the disease, a left lower lobectomy was carried out and was followed by complete relief of symptoms.

DIFFERENTIAL DIAGNOSIS

In describing some of the specific pneumonias which are associated with cavity formation in the lung and with suppuration, I have indicated how they are distinguished from non-specific suppurative pneumonia. The cavitation which occurs during pneumococcal pneumonia is transient and apparently followed by healing. Recognition of the chronic pneumonia due to Friedländer's bacillus may be more difficult; the course and radiological appearance may be very similar to non-specific chronic suppurative pneumonia, and the distinction depends on the recovery from the sputum of *Bact. pneumoniæ* in pure or almost pure culture. In staphylococcal pneumonia, the clinical features, particularly at or near the onset, may strongly suggest the cause. The staphylococcus may be found in pure culture in the sputum or may be recovered from the blood-stream. In the more chronic phase of the illness the bacteria recovered from the sputum may be varied, other organisms besides the staphylococcus having established themselves in the damaged lung. In these circumstances it may be possible to guess the original nature of the infection from the clinical course of the disease; but in general its distinction from the non-specific variety of pulmonary suppuration is not then very valuable, since the outlook and treatment of both are the same. The recognition of actinomycotic infection of the lung also depends on the finding of the organism.

Pulmonary tuberculosis might be expected to be commonly confused with suppurative pneumonia. Certainly the long course of both and the similar radiological appearance may give rise to difficulties in diagnosis. Nevertheless, I believe it is usually possible to make the distinction. In the first place, there is the association of pulmonary suppuration with sources of infected material in the respiratory tract. Then, the onset with the production of a considerable, and sometimes very large, amount of sputum fairly early in the disease is characteristic of suppurative pneumonia. This is quite unlike the early stages of pulmonary tuberculosis, in which it is rare for large quantities of sputum to be produced. Finally, repeated examination of the sputum for tubercle bacilli with negative results, both from direct examination and from culture, may be regarded as adequately distinguishing suppurative pneumonia from tuberculosis.

There is, however, a group of cases, of which I propose to describe an example, in which the two diseases occur together.

Case 12.—A man, aged 51, was admitted to the Brompton Hospital in October, 1947. He had been regarded as having chronic bronchitis since the end of the 1914–18 war, and since then had had some purulent sputum. Six months before admission, he became ill with fever and malaise. After three or four days of this illness he, as he said, "smelt fumes in his mouth" when lying on his left side. There was no great increase in his cough or sputum, but after this the sputum did occasionally become offensive. A month before admission he noticed streaks of blood in the sputum, and he was seen at his local tuberculosis clinic, where his sputum was repeatedly examined and found free from tubercle bacilli.

On admission to the Brompton Hospital, he was febrile to 100°F; he had some cough, and was bringing up 2 oz. of purulent, but not fœtid, sputum each day. His fingers were clubbed, and he had physical signs suggesting consolidation over the upper part of his right chest posteriorly. The radiological appearance, shown in figs. 37 and 38, did not change much during his stay in hospital. It will be seen that there is consolidation in the right upper zone, with probably irregular cavitation in it. The lateral view shows that a large part of the upper lobe is consolidated.

Examination by smear and concentration of eight successive specimens of sputum again failed to demonstrate the tubercle bacillus. The sputum contained a mixed flora, and on one occasion only *Bact. pneumoniæ* was isolated from it. Bronchoscopy revealed no abnormality in the bronchial tree. A trap specimen of secretion aspirated at bronchoscopy from the upper-lobe bronchus did not contain tubercle bacilli. A course of penicillin and sulphamezathine was given, and this was followed by reduction in the amount of sputum and gradual clinical improvement. Then, two days after the bronchoscopy, a few tubercle bacilli were found in his sputum, and successive daily specimens after this showed the organisms to be present in increasing numbers.

The patient died at home, nine months after the onset, of a coronary thrombosis. Necropsy is reported to have shown extensive fibrocaseous tuberculosis of the right upper lobe.

It is difficult to believe that this was simply a case of pulmonary tuberculosis from the beginning. It is surely far more likely that suppurative pneumonia developed in a pulmonary segment that was already the site of a healed or quiescent tuberculous lesion. The destructive suppurative process involved the possibly encapsulated tuberculous focus, and allowed its still living bacilli to invade the partly destroyed lung.

I have already drawn attention to the relation of bronchial carcinoma to pulmonary suppuration; and in practice the distinction between suppuration associated with carcinoma on the one hand, and non-specific suppurative pneumonia on the other, may be extremely difficult. For example:

Case 13.—A Norwegian seaman, aged 52, was admitted to hospital in January, 1949. He had been ill for two months with a cough and an ounce or two each day of mucopurulent sputum, never fœtid. He had lost 10 lb. in weight. A radiograph (fig. 39) taken shortly before admission showed consolidation in the left mid-zone. Lateral views showed the consolidation to be in the apical segment of the left lower lobe; and this was confirmed by lateral tomograms (fig. 40). Bronchoscopy showed pus exuding from the orifice of the bronchus to this segment; the orifice itself was inflamed, but no growth was seen. A biopsy specimen taken from it showed no evidence of growth. The patient was treated by postural coughing and by penicillin and sulphamezathine. As a result of this, his sputum diminished in amount, but no striking change took place in the radiological appearance.

A month after the patient's admission, in view of the lack of radiological change, and in the belief that he had a carcinoma, probably of the bronchus to the apical segment of his lower lobe beyond the range of bronchoscopic vision, it was decided

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Fig. 39—(Case 13). Chronic suppurative pneumonia regarded as bronchial carcinoma: postero-anterior radiograph showing consolidation in left mid zone.

Fig. 40—Same case. Left lateral tomogram showing consolidation to be in apical segment of left lower lobe.

DR. STOKER

Fig. 1—*R. burneti* M1 strain. Intracytoplasmic group of rickettsiæ seen in Giemsa-stained peritoneal smear from a guineapig inoculated with a heavily infected yolk-sac suspension. (× 6000.)

Fig. 2—*R. burneti* Henzerling strain. Electron microphotograph, gold shadowed. (× 27,000.)

Fig. 3—*R. burneti* Christie strain. Electron microphotograph, gold shadowed. (× 50,000.)

Fig. 4—*R. burneti*, Christie strain. Electron microphotograph, gold shadowed. (× 100,000.)

that his chest should be explored. Left thoracotomy was performed, and a hard mass was found in this segment, densely adherent to the chest wall. Pneumonectomy was carried out, and the patient recovered and returned to Norway. On examination of the specimen, no evidence of carcinoma was found; but the apical segment of the lower lobe was occupied by a chronic suppurative process.

Obviously, when on bronchoscopy a biopsy specimen containing carcinomatous tissue can be obtained, diagnosis is not difficult. At the other extreme, when cases of extensive pulmonary suppuration show considerable radiological shrinkage of the lesion as well as clinical improvement on treatment by postural coughing and chemotherapeutic agents, they may be cautiously regarded as not being associated with bronchogenic carcinoma. Even this is by no means certain and must be checked by repeated bronchoscopy. When the lesion is of lobar distribution more weight can be given to a negative bronchoscopy, since an associated growth would almost certainly have involved the main lobar bronchus and should therefore be visible bronchoscopically. With lesions of segmental distribution a negative bronchoscopy is not so significant, since the segmental bronchus can be involved by a carcinoma which may be beyond bronchoscopic vision. It is this sort of lesion which gives the greatest difficulty in differential diagnosis. In the active phase of the disease no important information is to be obtained from bronchography, since even where there is no carcinomatous obstruction the iodised oil usually fails to enter the relevant bronchus. I am sure that in cases of doubt, if other considerations allow it, thoracotomy should be performed.

The only other condition to which I am going to refer is bronchiectasis. It is possible that bronchiectasis complicated by consolidation of the lung around dilated and inflamed bronchi may be confused sometimes with chronic suppurative pneumonia. The history will usually suggest the correct diagnosis. The bronchiectatic patient will commonly have a long history, very frequently going back into childhood, of cough and sputum. He will often have had pneumonic episodes in the past, and the pneumonia with which he presents himself will usually clear fairly rapidly. However, pulmonary suppuration may be associated with bronchiectasis and arise by the aspiration of infected material from the dilated bronchi into other parts of the lung.

TREATMENT

In both the groups of cases to which I have been referring, the first method of treatment adopted when the patient was admitted to hospital was postural drainage under the care of a physiotherapist. Both groups were given courses, in some cases repeated, of one or other of the sulphonamides. Of the military hospital series, only 8 were given penicillin; and even in these cases the doses given were small by present-day standards, since the drug was difficult to obtain in the Middle East in 1944 and 1945. In the Brompton Hospital group penicillin was administered in much larger dosage and for longer periods. The results in patients treated by such measures as these are summarised in table II. In the military hospital group, 1 patient became free from symptoms, and the radiograph of his chest showed only slight fibrosis. Another patient became well with an apparently normal radiograph, but had 1 oz. of purulent sputum each day. In the Brompton Hospital group, following these measures, 3 patients became free from symptoms and had relatively slight fibrotic changes to be seen radiologically in their lungs.

Both series included patients who were greatly improved clinically and had much less sputum than before treatment, but in whom radiological changes indicated severe fibrosis. In the military hospital series there were 2 such cases, and in the Brompton Hospital series, 7. Bronchograms of patients with gross fibrotic changes showed

TABLE II—RESULTS IN PATIENTS TREATED WITH CHEMOTHERAPY AND POSTURAL COUGHING

	No. of cases	
	Brompton Hospital	Military Hospital
Symptom-free, and with slight radiological changes	3	2
Improved, but with severe fibrosis	7	2
With progressing disease	4	9
Died	1	2
Total	15	15

13 of the Brompton Hospital group, and 10 of the military hospital group were treated surgically.

distorted and dilated bronchi in the diseased area; and it is hard to believe that the outlook for such patients is other than bad, in view of the danger of reinfection of the damaged lung and further progression of the disease.

In the series of patients treated at the Brompton Hospital, there were 4 who, after postural drainage and chemotherapy, remained essentially unchanged with progressive disease. Of the other series, 9 continued over the period for which they were observed to be ill with extending inflammatory changes in their lungs. There were also 2 patients in the military hospital series who died, 1 from cerebral abscess and 1 from overwhelming infection. In the Brompton Hospital group 1 patient died from spread of his pneumonic process.

The most obvious difference between these results in the two series is that fewer of the Brompton Hospital than of the military hospital patients were left with progressing disease; and more had symptomatic improvement, though with residual fibrosis. There can be little doubt that this difference is due to the use of penicillin in the Brompton Hospital cases. What effect penicillin is likely to have on long-term prognosis in these chronic cases is difficult to assess at present, since it has been used in adequate dosage for so short a period.

In each group surgical resection of the diseased lobe or lung was carried out in a number of cases. In the Brompton Hospital series lobectomy was carried out in 10 cases and pneumonectomy in 3. In all but 2 cases these procedures were followed by satisfactory results, the patient having either no symptoms or no more than the expectoration of a trace of mucoid sputum with no evidence of remaining pulmonary suppuration. In 1 of the 2 unsuccessful cases the remaining lobe is the site of further suppuration, and in the other the patient died during the operation. In the military hospital group lobectomy was carried out in 9 cases and pneumonectomy in 1. Satisfactory results were obtained in 6 cases, and there were 4 deaths.

In observing these results of treatment it has seemed to me that the main advantage—a very great one—which has accrued from the introduction of penicillin is that its use reduces the amount of the patient's sputum and improves his general condition, thus increasing the safety of resection of the diseased pulmonary tissue. The main danger in the use of penicillin may well be that it reduces symptoms while leaving extensive fibrotic and destructive changes in the lungs. In some cases, where pulmonary resection is precluded by the extent of the disease or other considerations, the reduction of symptoms is wholly beneficial, but in others it may give doctor and patient a quite unjustified sense of security and thus prevent or delay the necessary operation.

Other methods of treatment were used. In the military hospital series external drainage of cavities was carried out in 6 cases. In no case did this procedure benefit the patient, and the suppurative disease continued to spread in the lung. In 1 case in each series a thoracoplasty was carried out, without benefit in either instance.

It is possible, I think, to summarise from these results a reasonable programme of treatment. When the patient first comes under care in hospital his sputum should be examined and cultured, and the sensitivity of its organisms to antibiotics and the sulphonamides determined. Meanwhile, an intensive course of postural drainage and coughing under the care of a physiotherapist should be begun. In almost all cases the sputum contains large numbers of organisms sensitive to penicillin, and penicillin should be given in doses of the order of 1 million units per day. I think it is valuable at the beginning of such a course to give sulphamezathine in the usual dosage for six or seven days. On such treatment as this, the patient in the matter of a few days feels very much better and his sputum begins to decrease; and, if this was offensive at the beginning, the fœtor will cease to be noticeable. It may be worth while after perhaps two weeks, if the sputum persists, to re-examine its flora, since it may now contain organisms which are mainly penicillin-resistant, and one of the other antibiotics may be useful. In the majority of cases, by such measures as these it is possible to achieve a state in which there is very little—but usually still purulent—sputum, a feeling of well-being, and radiographic evidence of fibrosis where there had previously been consolidation and cavitation.

This must be regarded as an adequate result in some patients—that is to say, those who, by reason of extensive and perhaps bilateral disease, or of old age, or of other related or unrelated diseases, are unsuitable for thoracotomy and pulmonary resection. Many of these patients will have further episodes of pulmonary infection, and arrangements should be made to admit them to hospital for further treatment by postural drainage and chemotherapy during each recrudescence.

In those patients where no such contra-indications are apparent, the next step should be to carry out bronchography in order to determine the extent of the severely damaged lung—that is to say, which lobe or lobes are involved and which are apparently intact. Where the extent of the damage, as shown by bronchograms, does not preclude it, the affected lobe or lung must be resected. This is the only measure likely to restore the patient to health and to stop the progression of the disease.

Summary

Certain specific pneumonias associated with suppuration are described.

The relation of bronchial carcinoma to pulmonary suppuration is discussed.

Patients with suppurative pneumonia not due to a specific organism or to bronchial carcinoma have in the sputum a mixed bacterial flora, the members of which are not specifically invasive for the lungs. These cases are held to be localised aspiration pneumonias, and form a series ranging from those in which the suppurative changes are slight to those which present as acute solitary lung abscess.

Cases of non-specific suppurative pneumonia may progress chronically, and their course is similar whether they begin as solitary abscesses or as predominantly pneumonic lesions.

In chronic non-specific suppurative pneumonia, once considerable suppurative changes have occurred, resection of the affected lobe or lung is the only measure likely to restore the patient to health.

I wish to thank the members of the Brompton Hospital staff for allowing me to use the hospital records; in particular, I am grateful to Dr. Clifford Hoyle, Dr. J. G. Scadding, and Dr. A. Foster Carter, who allowed me to make reference to cases under their care and gave me much other assistance. I also owe thanks to Prof. M. L. Rosenheim, who allowed me to use the records of a case under his care at University College Hospital, and to Mr. Andrew Logan for his help and coöperation over many years.

References at foot of next column

Q FEVER IN GREAT BRITAIN

EPIDEMIOLOGY OF AN OUTBREAK

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EVIDENCE that some of the cases of atypical pneumonia occurring in Great Britain were due to *Rickettsia burneti* was provided when 3 of 24 patients with this syndrome were found to have complement-fixing antibodies to this rickettsia (Stoker 1949). Titres in 2 of the cases were high and followed an illness clinically suggesting Q fever, while the titre in the third case was lower and was more probably related to past infection than to the recent attack of pneumonia. One of the patients had never been abroad, and it seemed certain that he had acquired his infection in this country.

The final proof of the presence of Q fever in Great Britain was the isolation of the causal rickettsia, *R. burneti*, from the blood of a patient with atypical pneumonia, during a small outbreak at the Royal Cancer Hospital, London. The clinical aspects of Q fever in this outbreak were described by Harman (1949) and the bacteriology by MacCallum et al. (1949).

Since the outbreak at the Cancer Hospital sporadic cases of Q fever have been found in Kent, Devon,

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Gloucestershire, Wiltshire, Oxfordshire, and Denbighshire. The highest incidence has been in Kent, and the next highest in Devon. Possibly these findings are partly due to the more intensive investigation of these two counties because of the identification of the sources of the Cancer Hospital outbreak in them.

Preliminary accounts of the epidemiology of the outbreak of Q fever at the Royal Cancer Hospital have been included in papers by MacCallum et al. (1949) and by Stoker and Marmion (1950). We describe here the epidemiological investigation in some detail and discuss the validity of the conclusions.

LABORATORY METHODS

Examination of Sera

Specimens of human and bovine sera were examined for Q-fever antibodies by complement-fixation tests; the technique has been described by Stoker (1949). Human sera were inactivated at 56°C for 30 minutes, but bovine sera (obtained from the jugular vein) were inactivated at 60°C for 30 minutes, because it was found that treatment at the higher temperature reduced the number of specimens showing a low-titre partial fixation, which was probably non-specific.

A formolised purified yolk-sac antigen made from the Henzerling strain of *R. burneti* was used for all tests. At first this was supplied by Dr. Cox, of Lederle Laboratories, New York, but later the strain itself was obtained and antigen was prepared at Cambridge by the technique used in Dr. Cox's laboratory and described by Wolfe and Kornfeld (1949). No differences were detected in direct comparisons between the antigens made in the U.S.A. and England.

Large batches of human and bovine sera were first tested at a single dilution of 1/8 or 1/10, and those which showed fixation were retested over a range of dilutions to determine the end-point. A titre of 1/10 was considered to be the lowest significant dilution, but higher titres were generally found in specimens from humans who had recently had Q fever, and from cows which were excreting *R. burneti* in the milk at the time.

Examination of Milk

Duplicate samples of about 15 ml. of milk were taken into universal containers with rubber-lined screw caps, and sent to the laboratory in a vacuum flask or insulated box packed with solid carbon dioxide. One sample was examined at the Department of Pathology, Cambridge, and the other at the Virus Reference Laboratory, Colindale. Milk was pooled in lots representing 2–4 farms for the initial examination, and the components of positive pools were later retested individually.

Two previously bled guineapigs weighing 300–500 g. were injected with 3·0–4·0 ml. of milk intraperitoneally and caged with an uninoculated control animal so that cross-infection from animals in other cages might be detected. Rectal temperatures were recorded daily, and blood was removed for passage from some guineapigs which became febrile 8–15 days after inoculation. Test and control animals were killed and bled four weeks after inoculation, and the sera were subsequently tested in parallel with the pre-inoculation samples for complement-fixing antibodies to *R. burneti*. Provided the uninoculated controls showed no serological response, a rise in the titre from less than 1/5 in the first to more than 1/20 in the second specimen was taken to indicate infection with *R. burneti*.

ROYAL CANCER HOSPITAL OUTBREAK

The case numbers correspond to those used by Harman (1949). The outbreak can be divided into two probably unconnected episodes, consisting of 4 cases in July and 2 in September, 1949. The outbreak is described mainly in the sequence in which the investigation evolved.

On July 20, 1949, the Virus Reference Laboratory received specimens of serum and clotted blood from a nurse and a pathologist at the Cancer Hospital who had been diagnosed as pyrexia of unknown origin, possibly Q fever. Isolation studies and identification of the rickettsia occupied about a month, and the diagnosis of Q fever in the 2 cases was certain by the end of August. Epidemiological investigations were begun on August 31, 1949, when a visit was made to the hospital. At this time the pathologist (case 1) and the nurse (case 2) had fully recovered from their attack of Q fever.

Case 1 was interviewed, and the date of onset of his illness was established as July 12. The incubation period of Q fever is usually about 19 days, with a range of 14 to 26 days. Case 1 had therefore been infected during the period June 17–28, probably on June 24 or 25. He kept a diary and could account for his movements outside the hospital during this period.

Case 2 had become ill on July 10–11, about a day earlier than case 1, and although she could not remember in detail her activities during the period June 12–29, when she was infected, it was clear that she had not visited any of case 1's list of places or entertainments outside the hospital. It therefore seemed probable, that both case 1 and case 2 had been infected inside the hospital.

Contact between case 1 and case 2 was not frequent as a consequence of their hospital duties, but nevertheless a common source of infection seemed likely because of the almost simultaneous onset of their illnesses. A possible common source of infection could have been a patient, and in view of case 1's work, which included the performance of necropsies among other clinico-pathological duties, a search of the necropsy records was made for a patient who had died in X ward, where case 2 had been working, and who had been examined post mortem by case 1. There had been no necropsies from June 10 to June 20; from June 20 to June 27 there had been six, and then no more until July 14. Two of these six patients had come from X ward, but only one had been examined by case 1. This was case 5, whose autopsy had been done on the morning of June 25, and the cause of death had been recorded as cerebral thrombosis and lobar pneumonia. It was then discovered that case 2 had been in frequent attendance on this patient and had "laid him out" after his death on June 24.

The necropsy had also been attended by a mortuary attendant (case 3), and another doctor (case 4). On inquiry it was found that the mortuary attendant was ill with bronchitis and pneumonia in another hospital, and that the doctor had recently recovered from a mild febrile illness. Both were bled and had high titres of *R. burneti* antibodies, although their illnesses were not typical of Q fever. The onset of case 3's illness was about July 10, and case 4's about July 13, which was consistent with infection at about the same time as cases 1 and 2. The staff of the pathological department consisted of 15 persons: 3 doctors, 2 hæmatologists, 4 technicians, 1 mortuary attendant, 2 secretaries, 2 cleaners, and 1 boy. Only the two doctors (cases 1 and 4) and the mortuary attendant (case 3) who had attended the necropsy had had proved attacks of Q fever; the remaining 12 members of the department were well. Sera from the 4 technicians and the other doctor, whose daily work resembled in other respects that of cases 1, 3, and 4, showed no *R. burneti* antibodies. The terminal illness of the patient and his necropsy thus provided a possible common source of infection for the nurse, the two pathologists, and the mortuary attendant.

Case 5, a man aged 78, had been admitted to X ward on May 27 so that his dysphagia, thought to be due to a carcinoma, could be investigated. Eighteen days after admission he became febrile and signs of bronchopneumonia were found. This was not an unexpected complication, for his dysphagia led to the aspiration of food and fluids into his lungs. The bronchopneumonia did not respond to chemotherapy with penicillin and sulphonamides, and he died on June 24. The time relationship of case 5's illness to that of the other cases described above is shown in fig. 1. Later investigations by Whittick (1950) have shown that the gross and histological appearances of case 5's lung correspond to those

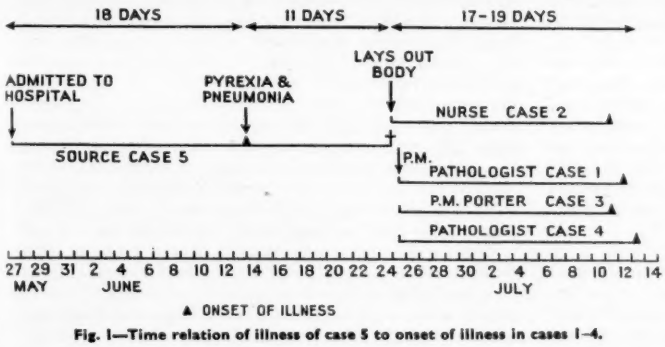
18 DAYS
11 DAYS
17–19 DAYS
LAYS OUT BODY
ADMITTED TO HOSPITAL
PYREXIA & PNEUMONIA
NURSE CASE 2
SOURCE CASE 5
P.M. PATHOLOGIST CASE 1
P.M. PORTER CASE 3
PATHOLOGIST CASE 4
27 29 31 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 2 4 6 8 10 12 14
MAY
JUNE
JULY
▲ ONSET OF ILLNESS

Fig. 1—Time relation of illness of case 5 to onset of illness in cases 1–4.

found in Q fever. This information was not available at the time, but investigations proceeded on the hypothesis that case 5 had had Q fever and that either he had been admitted to hospital during the incubation period of the disease, having been infected shortly before admission, or that he had been infected very shortly after admission. The period of eighteen days between admission and the onset of his illness was consistent with either possibility.

These alternatives of infection outside or inside the hospital were investigated concurrently, the first by a visit to case 5's home in Kent, the second by a search for any previous cases of Q fever among the patients in X ward or the staff of the hospital in general.

Of the 31 patients who had been in X ward at the same time as case 5, none had had a suspicious fever before the onset of his illness, and only 6 had had any fever between May 27 and June 24, when case 5 had been in the ward. In 2 patients the fever had clearly been related to a recent operation, and in the other 4 probably to their cancerous condition. Sera taken three or four months later from 5 of the patients who had been febrile were negative for *R. burneti* antibodies; the sixth patient had died shortly after discharge from hospital. All the 31 patients were followed up, and none had had any unexplained febrile illness after discharge from hospital. An attempt was made to examine the serum of each patient, and this was done with negative results in 22 patients, but in 5 cases blood could not be obtained owing to death since discharge, and 4 patients refused venepuncture.

The staff of X ward, other than case 2, consisted of a house-physician, a sister, eight nurses, two ward orderlies, and two maids. None of these persons had been ill and all, except the house-physician and the maids, who refused specimens, were serologically negative. There was no other illness clinically or serologically suggesting Q fever in the general staff of the hospital at this time, and no record of the importation of any likely source of Q fever, such as raw milk, raw dairy foods, and animal products, was found on inquiry at the hospital catering department.

It therefore seemed that case 5 had been admitted while incubating Q fever. It was also established that he had not been exposed to any suspicious case or possible source of Q fever during the journey on May 27 from his home in Kent to the Royal Cancer Hospital. The ambulance crew who had been with him on this journey were well and serologically negative.

EPIDEMIOLOGICAL STUDIES IN KENT

Early in September a visit was made to case 5's household, which consisted of his wife and two daughters, in a seaside town of N.E. Kent. Another married daughter and two married sons were occasional visitors. The three daughters and one son were quite well, and their sera were negative. The other son was also well, but he lived in another part of the country, and his serum was not examined. Case 5's wife (case 6), however, was confined to bed with a vague illness complicated by cardiac failure, and her serum had a high titre of *R. burneti* antibodies (1/640). Her illness had started with diarrhœa on July 25, and a minor stroke followed on Aug. 1. The clinical picture was not that of Q fever, and it was uncertain whether the *R. burneti* antibodies resulted from the illness or past exposure. She had not visited or seen her husband since he went to hospital or after his death, but had received letters from him.

Case 5 had been a jobbing tailor by trade but of recent years had only done work for neighbours and friends. He had neither history of occupational exposure to animals, as is found in some cases of Q fever, nor had he repaired any clothing soiled with animal excreta, handled packing straw, or recently received food parcels from abroad. There was a small retail dairy A about 100 yards from his house, and a butcher's shop with a sausage-manufacturing plant at the back of the premises.

The investigations of Huebner et al. (1948) in California showed that raw milk from many dairy herds was infected with *R. burneti*. So, since no other source of infection had been found to explain case 5's illness, his milk-supply was investigated. His household was supplied by the small retail dairy A which received bulked heat-treated milk from London and some raw milk from local farms. These two milks were bottled at the dairy and sold separately, and it was impossible to find out which customers had raw and which had pasteurised milk, if, indeed, distribution was at all consistent. Dairy A and two other local dairies B and C, one (B) combined with a farm and both unconnected with case 5's household, were investigated. Volunteers were bled, and their sera were tested for *R. burneti* antibodies. At dairy A, 2 of the 8 volunteers had low titres of complement-fixing antibodies to *R. burneti*, and 6 of the 19 volunteers from dairies B and C were positive, 2 having titres of 1/80 (see table). One of these two men had had a febrile illness with pneumonia three months before. This man, unlike some of the others, had never been abroad, and consequently it seemed

DISTRIBUTION OF *R. burneti* TITRES IN FARM AND DAIRY WORKERS AND CATTLE

Place		Titre to *R. burneti*								Total
		< 1/10	1/10	1/20	1/40	1/80	1/160	1/320	1/640	
Kent:										
Dairy A	e	6	2	—	—	—	—	—	—	8
,, B	e	7	4	—	—	1	—	—	—	12
,, C	e	6	—	—	—	1	—	—	—	7
Farm K	e	2	1	—	—	—	—	—	—	3
	c	43	2	—	—	—	—	—	—	45
,, W	e	1	1	—	—	—	—	—	—	2
	c	18	2°	1°	1	1•	—	—	1•	24
,, L	c	2	—	—	—	—	—	—	—	2
	c	23	—	—	—	—	—	—	—	23
,, Gi	e	1	—	—	—	—	—	—	—	1
	c	3	—	—	—	—	—	—	—	3
,, Gol	e	—	—	—	—	—	—	—	—	—
	c	17	—	—	—	—	—	—	—	17
,, Go	e	1	—	—	—	—	—	—	—	1
	c	20	—	—	—	—	—	—	—	20
,, R	e	—	—	—	1	—	—	1	—	2
	c	10	—	—	—	1•	—	—	—	11
Devon:										
Farm D	e	1	—	—	—	—	—	—	—	1
	c	12	1	1	—	—	—	—	—	14

e = employee(s) • = *R. burneti* isolated from milk of cow.
c = cows ° = *R. burneti* not isolated from milk of cow.

certain that Q fever was present in the area, and that the illness of case 5 and his wife did not represent an isolated importation of *R. burneti*.

Next, the seven local farms supplying dairy A were visited, some of the farm workers and cattle bled, and samples of the milk taken. Here again, serological positives were found among the farm workers and cattle. Two of the farm workers with the higher titres had had severe attacks of "influenza" during the previous six months or year. The table shows the distribution of the titres against *R. burneti* found in the men and the cattle.

Finally, *R. burneti* was isolated from the herd milk of two of the farms. Herd milks from all farms were tested on two occasions at a week's interval, and from the positive ones at intervals during five months. Farm W was positive on each of four tests covering a period of five months, and farm R was positive on each of three tests during a period of three months. Milks from dairies B and C were negative on guineapig inoculation. These tests were made nine months after the original visits to bleed the employees of dairies B and C. It is of interest, however, that in 3 recently discovered cases of Q fever the patients had had their milk from one or other of these two dairies.

Fig. 2 summarises the position. It will be noted that in dairy A and its farms there was good agreement between the presence of *R. burneti* in the milk and antibodies in man and cattle.

SECOND EPISODE AT ROYAL CANCER HOSPITAL

While the investigations in N.E. Kent were in progress, an unexpected development had taken place at the Royal Cancer Hospital. The staff had been closely watched for any secondary cases infected from the first 4 patients, although published evidence suggests that such spread is exceedingly rare in outbreaks of Q fever.

On Sept. 10 the laboratory was told that a physicist (case 7) working in an institute attached to the hospital, was ill with a condition clinically suggesting Q fever.

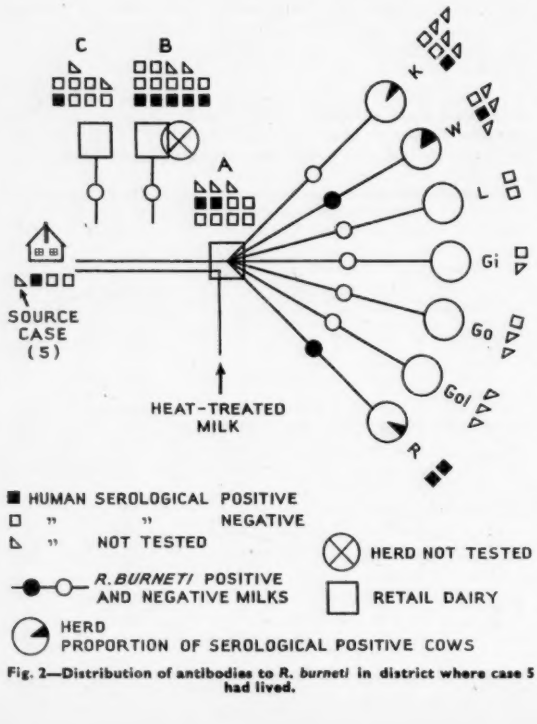

Fig. 2—Distribution of antibodies to *R. burneti* in district where case 5 had lived.

The date of onset of case 7's illness was Sept. 7, about two months after the first group of cases. His probable date of infection was therefore about Aug. 20, with a range from Aug. 13 to Aug. 25. He had, however, been on holiday in Devon from Aug. 1 to Aug. 31. In addition his wife (case 8), who had not been in the hospital for over a year, had also become ill on Sept. 9 with similar signs and symptoms. Because of the epidemiological improbabilities involved, the suggestion that these were fresh cases of Q fever was received with considerable scepticism, but a rising titre to *R. burneti* in both patients soon justified the provisional clinical diagnosis.

The manner in which cases 7 and 8 had contracted Q fever could be explained in one of two ways: either they had been infected from the first group of cases by taking some contaminated article from the hospital on holiday with them, or they had been infected from some quite different source unconnected with the first group of cases. The only article case 7 could remember taking from the hospital was a cardboard box of tab. codeinæ co. These had come from a ward unconnected with case 5 or the cases infected from him. This left the second possibility. Further inquiry revealed that between Aug. 15 and Aug. 20, cases 7 and 8 had made the acquaintance of a Devon farmer and been guests at his farm D several times. They had had meals, including liquid cream, at the farm and had been present at the delivery of a cow named "Tabor Lass." In November we heard from case 7 that case 9, a Devon resident who had also visited the farm and been present at the delivery of "Tabor Lass," was convalescing from atypical pneumonia, which had started on Sept. 9. His serum was then examined and found to have a high titre to *R. burneti*. With the kind assistance of various members of the Devon Epidemiological Society, 14 of the 40 cattle on the farm were bled, and 2 of them were found to have antibodies for *R. burneti* in low dilution (1/10 and 1/20). One of the positive cows was "Tabor Lass." Pooled milks collected from the herd on Dec. 2 were negative on guineapig inoculation. Unfortunately "Tabor Lass" was dry at that time, making it impossible to test her milk.

There was therefore a group of 3 cases starting about the same time and presumably infected from the same source. It is reasonable to suppose that this source was the farm or possibly some other place in the area where they had spent their holiday. If case 7 had been infected at the Royal Cancer Hospital, other cases might have been expected among the staff. Suggestive febrile illnesses in two other workers in the institute and in an anæsthetist were investigated and found not to be Q fever. Apart from these three persons there was no other illness among the staff at the hospital up to January, 1950.

DISCUSSION

The results of the epidemiological investigations just described could be interpreted as showing the spread of infection by devious routes from two farms to members of the staff of the Royal Cancer Hospital. However, certain links of this interesting chain of events must be examined more critically.

There can be little doubt that the immediate source of infection of the nurse, the two pathologists, and the mortuary attendant was case 5. Whittick's (1950) investigations have shown that the morbid anatomical findings in this patient strongly suggested Q fever. The onset of illness in the 4 patients was limited to a period of three days, indicating infection from a common source rather than spread from person to person, and case 5's death and necropsy provide a common factor linking the nurse and the pathologists. In addition, persons in the ward and pathological department who had not been closely exposed to case 5 did not contract Q fever.

The published accounts of the epidemiology of Q fever emphasise the rarity of infection of nurses and physicians

attendant on cases of Q fever, and in this exception to the rule there were undoubtedly special circumstances. The finding by Whittick (1950) of large numbers of rickettsia-like organisms in case 5's lung is one that has not previously been described in other cases of Q fever. It may be that the presence of such large numbers made the patient more than ordinarily infectious. Towards the end of his illness case 5 was incontinent of urine and producing sputum which, owing to his dysphagia, he often regurgitated with his food. He was therefore a more "dirty" patient than the Q-fever patients of previous studies, drawn from the Army or occupational groups, who had short illnesses, produced little sputum, and, although rickettsiæ might be present in their urine, were not incontinent and could dispose of their urine in a hygienic way.

The nurse (case 2) had very close contact with case 5 when she "laid him out," and was the only person in X ward to contract the infection. "Laying out" presumably included much handling of bed clothes and pyjamas contaminated with excreta and food in addition to direct contact during the washing of the body. Oliphant et al. (1949) have shown that rickettsia-contaminated laundry can be a source of infection in Q fever.

In considering the mode of infection of the pathologists reference must be made to the conventional possibilities of infection via skin abrasions or the conjunctiva, but by analogy with the experience of persons working with infected animal material it is more probable that they were infected by the inhalation of small droplets formed during the removal and cutting of case 5's organs, in particular the lung. Sloan (1942) has shown that tubercle bacilli can be recovered from glass plates situated 8 inches away from the lung of tuberculous patients during necropsy. The handling of the lung in Sloan's experiments was gentle, no splashing occurred, but crepitation tests were done by gently squeezing the tissue. Probably such crepitation tests, or the natural retraction of the lung on cutting, would lead to the expulsion of air containing fine infected droplets. The pathologists at case 5's necropsy wore gowns and gloves, and a hose was not used to wash the organs; these were, however, washed under the tap, with the result that some more obvious splashing must have occurred.

The manner in which case 5 was infected is not so clear. The incubation period of Q fever is usually taken to be about nineteen days. It therefore seems that case 5 was infected very shortly before his admission to hospital. The fact that his wife was serologically positive makes it probable that he was infected while living at home rather than during his journey to hospital. One other, more remote, possibility must be considered in passing—i.e., the accidental aspiration of barium into his lungs during the investigation of his dysphagia shortly after admission (Harman 1949) provoked a change of a latent and more long-standing infection with *R. burneti* into an acute pneumonia. In these circumstances he might have been infected in the more remote past. Consultation with his family doctor has not, however, revealed any past history of recurrent febrile episodes such as occurs in a minority of cases of Q fever. The only environmental source of *R. burneti* which was found was the milk-supply to case 5's household, and it is possible that consumption of this milk was responsible for the illness of case 5 and his wife. Before the significance of this finding can finally be assessed, it is necessary to know something of the incidence of Q fever in those of case 5's neighbours who were consuming the same milk as compared with those using pasteurised milk from other sources. Such investigations are now in progress. Stoker (1950) shows that the strain isolated from the pathologist, case 1, and presumably acquired from case 5, and another strain (M_1), isolated from case 5's milk-supply, behave differently in their animal and egg pathogenicity. It seems improbable that two human passages would be sufficient to alter the characteristics of the human strain if it had originally come from the milk. At least three cows excreting *R. burneti* contributed to the pool from which strain M_1 was isolated. Perhaps the strain M_1 and the strain infecting case 5 came from different cows. Nevertheless the difference between the human and milk strains underlines the need for caution in attributing case 5's infection to his milk-supply.

In spite of the failure of milk to infect by the gastro-intestinal route in experiments on volunteers (Fonseca et al. 1949) the evidence that raw milk can be a source of infection is very strong. Bell et al. (1950), in a brilliant epidemiological study of Q fever in California, showed that the incidence of serological positivity was 10·7% in raw-milk drinkers as compared with 0·9% in control groups using only pasteurised milk. Whatever the time and source of case 5's infection, it is clear that he came from a place where the disease is endemic; this is proved by the subsequent discovery of other cases of Q fever in the same town, and by the fact that 16% of a sample of 83 blood donors in the town had serological evidence of previous infection.

The occurrence of the second group of cases in the Royal Cancer Hospital outbreak (cases 7, 8, and 9) is a remarkable coincidence, because no other cases of Q fever have been found during the examination of sera from more than 300 cases of atypical pneumonia in London. The evidence presented must lead to the conclusion, however remarkable, that cases 7 and 8 were not infected from the first group of cases at the Cancer Hospital but in Devon. Attendance at the delivery of the cow "Tabor Lass" may have been the occasion of infection. Luoto and Huebner (1950) have shown that placentas from 39% of 33 serologically positive cows contained *R. burneti*, as many as 10^8 guineapig infective doses being present in some instances. There is no direct evidence that the placenta of "Tabor Lass" was infected, although her serum was positive, but the incident is suggestive. The discovery, in collaboration with the Devon Epidemiological Society, of other cases of Q fever in the same part of Devon establishes the county as another endemic area in which cases 7 and 8 could have acquired their infection.

The occurrence of a previously unsuspected disease always raises the question whether it is a recent importation. Little direct evidence can be brought on this point; but it is perhaps worth noting that, in spite of the large numbers of cases which must, on the basis of serological surveys of dairy and farm workers and blood donors, have occurred in the endemic areas, practitioners did not feel that there had been any undue incidence of fevers or pneumonias. Certainly many cases of Q fever must have been dismissed as "influenza," "brucellosis," and the like. The difficulty of recognising cases of Q fever on clinical grounds alone and their essentially sporadic distribution are adequate reasons for the failure to detect them in the past.

SUMMARY

The epidemiological investigation of an outbreak of Q fever at the Royal Cancer Hospital, London, is described.

The outbreak comprised two apparently unconnected episodes, the first consisting of four cases in July, 1949, and the second of two cases in September, 1949.

In the first episode a nurse, two pathologists, and a mortuary attendant were apparently infected during the terminal illness and at the necropsy of an unrecognised case of Q fever.

In the second episode, two months later, another member of the staff and his wife were infected while on holiday in Devon.

The fatal case of Q fever came from N.E. Kent, and the patient may have been infected there by the consumption of raw milk, which was shown to contain *R. burneti*.

Other investigations, by the detection of more cases of Q fever and the demonstration of antibodies in farm workers and cattle, have shown that parts of Kent and Devon are areas where Q fever is endemic.

We wish to thank Dr. B. Lewis, resident medical officer at the Royal Cancer Hospital, for her helpful suggestions and coöperation; Dr. C. E. Etheridge and Dr. T. A. R. Callender, Mr. F. W. I. Whitehouse, sanitary inspector, and Mr. A. J. Beeson, Mr. J. Stewart, and Mr. J. Edwardson, veterinary inspectors, all of whom gave considerable help in the Kentish investigation; Dr. B. Moore, who gave valuable help and advice in Devon; and Mr. J. R. McDonald, A.I.M.L.T., and Mr. P. H. Phipps, A.I.M.L.T., at Colindale, and Miss Z. Page, at Cambridge, for technical assistance.

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Q FEVER IN GREAT BRITAIN

THE CAUSATIVE AGENT

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With illustrations on plate

THE organism which causes Q fever was first described in 1937 by Burnet and Freeman working with a strain isolated in Queensland by Derrick (1937). The agent was shown to possess the general characteristics of a rickettsia and Derrick suggested the name *Rickettsia burneti*.

At about the same time Davis and Cox (1938) isolated a similar organism from the tick *Dermacentor andersoni* collected at Nine Mile Creek, Montana, U.S.A., and because it passed through filters which normally retained bacteria and other rickettsiæ they named it *Rickettsia diaporica*. Subsequently Burnet and Freeman (1939) and Dyer (1939) showed that these two organisms were identical and the name *Rickettsia burneti* was universally adopted. Despite its resemblance to other rickettsiæ, *R. burneti* possesses some distinguishing features. For example, it may pass through filters with an average pore diameter as small as 400 mμ and it remains viable for long periods when stored without refrigeration —probably an important epidemiological feature. Philip (1948) has suggested that these differences are at a generic level and has proposed a new name, *Coxiella burneti* (Derrick), for the organism.

In the last few years Q fever has been identified, and *R. burneti* isolated, in several different countries, thus enabling strains from widely separated geographical areas to be compared. Strains originating in Italy, Greece, and Panama, as well as in Australia and the U.S.A., were compared by Robbins et al. (1946) and Topping et al. (1946). These studies showed that there was complete reciprocal cross-immunity in guineapigs between the strains studied, but that Mediterranean and Australian strains produced a milder disease than American strains in these animals. Complement-fixation tests revealed that the sensitivity of antigens made from Mediterranean strains was much higher than those of the American strains. Mediterranean strain antigens revealed high antibody-titres in sera from any strain, whereas American or Panama strain antigens would not react even with their own homologous antisera unless very high antigen concentrations were used. This was of great practical importance, since the Mediterranean strains were obviously preferable for diagnostic antigens and the Henzerling Italian strain was especially suitable in this respect.

It appeared, therefore, that strains of *R. burneti* could broadly be divided into two groups: (1) the American and Panama strains, and (2) the Mediterranean and probably Australian strains. The American strain used in these studies, however, was the Dyer strain, and Wolfe and Kornfeld (1949) have since reported that they could detect no antigenic difference between the original American Nine Mile strain isolated from ticks and the Italian Henzerling strain. Although no direct comparisons have been reported, it thus seems that these two American strains, Nine Mile and Dyer, are antigenically distinct in that the former resembles the Italian strain and the latter does not (Strauss and Sulkin 1949). This is particularly interesting because the Dyer strain was isolated from an individual supposedly infected with the Nine Mile strain in a laboratory. It seems unlikely that these fundamental differences have arisen simply from one human passage of the organism, and it is possible that this individual was actually infected, in the laboratory or elsewhere, with another strain altogether.

R. burneti was first isolated in Great Britain last year by MacCallum, Marmion, and Stoker (1949), and subsequently several strains have been obtained from raw milk in endemic areas by Marmion and Stoker (1950). This paper reports a laboratory study of the original human (Christie) strain and the first milk strain to be isolated (M1 strain), and a comparison of both with the standard Italian (Henzerling) strain.

MATERIALS AND METHODS

Strains of R. burneti

The original isolation of the Christie strain from a human case of Q fever has been described elsewhere (MacCallum et al. 1949). The other strain (M1) was obtained from a pool of raw milk collected from three farms in north Kent during the epidemiological investigation described by Marmion and Stoker (1950).

Two (previously bled) guineapigs were inoculated intraperitoneally with 4 ml. of the milk pool, and both developed fever fifteen days later. One guineapig was killed immediately and its heart-blood was passed to fresh guineapigs. The second guineapig was bled nineteen days after the onset of fever, and it was found to have developed Q fever complement-fixing antibodies. An uninoculated guineapig in the same cage developed no fever or antibodies.

These indigenous strains of *R. burneti* were compared with the Henzerling strain * isolated from a soldier in Italy by Robbins et al. (1946). This was chosen because it is the strain most commonly used for antigen preparation, and because it has been studied extensively and compared with other strains from different parts of the world (Topping et al. 1946).

Male or female guineapigs weighing 400–500 g. were used for most of the animal experiments and were inoculated intraperitoneally. Their rectal temperatures were recorded daily and a temperature of over 103·5°F was regarded as abnormal. Citrated heart-blood withdrawn on the second or third day of fever was generally used for passage to further guineapigs in 3–4 ml. quantities, but 10% spleen emulsion was sometimes used instead. All mice used were of the Glaxo MM strain.

Fertile hens' eggs (White Leghorn) were incubated at 37°C for six days before the inoculation into their yolk sacs

* Kindly supplied by Dr. Cox of Lederle Laboratories, New York.

TABLE I—SUMMARY OF THE BEHAVIOUR OF THREE STRAINS OF *R. burneti* IN GUINEAPIGS

Strain	Inoculated with guineapig heart-blood or spleen						Inoculated with infected yolk sac				
	Passage nos.	No. of guineapigs	No. developing fever	Mean incubation period (days)	Mean duration of fever (days)	No. of deaths	No. of guineapigs	No. developing fever	Mean incubation period (days)	Mean duration of fever (days)	No. of deaths
Christie ..	2–12	30	27	7·5*	2·0*	1	10	10	3·9	4·7	6
M1 ..	2–12	25	24	5·8*	3·8*	0	6	6	2·6	4·8	5
Henzerling	1–6	20	18	7·7	2·8	0	10	9	3·3	3·4	0

* Standard error of the difference between mean incubation periods of Christie and M1 strains = 0·61, and between mean durations of fever = 0·62.

of 0·25 ml. quantities of infected material. The eggs were subsequently incubated at 35°C, with candling twice daily. Deaths occurring in the first three days were probably due to trauma or bacterial contamination and these eggs were discarded. Subsequently all moribund or dead eggs were cultured for bacterial infection; the yolk sacs were harvested and impression smears made and fixed in methyl alcohol. For passage a 50% suspension of bacteriologically sterile yolk sac was generally used.

For preparing tissue suspensions, 10% horse-serum broth was used throughout, and infected material was generally stored at −24°C, but seed suspensions consisting of specially selected, heavily infected yolk sacs were kept at −70°C in sealed glass ampoules. Routine tests of animal or egg material for bacteriological sterility were made aerobically on blood-agar, but sometimes additional cultures were made anaerobically and in 10% CO_2.

Smears and sections of infected tissues were stained with Giemsa stain. Early passage yolk-sac smears were stained by Macchiavello's technique, but this was found to be less satisfactory than Giemsa stain and was eventually discarded.

Owing to the frequency of human laboratory infection with *R. burneti*, infected animals were kept in small isolated huts on the roof of the department; another hut served as a small laboratory for manipulation of infected material, where all eggs were harvested inside an enclosed inoculation chamber. Laboratory personnel who were likely to visit these huts were inoculated with Q-fever vaccine.

EXPERIMENTAL STUDY

Behaviour in Animals

Both English strains and the Italian strain of *R. burneti* caused a mild febrile illness in guineapigs resembling that described by other workers with this organism. The incubation period for the first-passage in guineapigs was twenty-two days for the Christie strain and fifteen days for the M1 strain, but during subsequent passages it was usually four to ten days. The febrile period generally lasted one to five days with temperatures up to 106°F, followed by complete recovery. Out of 75 animals used for routine guineapig passage only 1 died spontaneously. This had been inoculated with the Christie strain, and although no bacterial cause of death was demonstrated it was not possible to prove that *R. burneti* was responsible.

Table I summarises guineapig passages 2 to 12 of the Christie and M1 strains and 6 passages of the Henzerling strain. It will be noted that over the same passages the mean incubation period for the Christie (human) strain was greater than that for the M1 (milk) strain, and statistical analysis shows that this difference was unlikely to be due to chance. Similarly, there is a significant difference in mean lengths of fever between the Christie and M1 strains, all of which suggests that the M1 strain was slightly more pathogenic for guineapigs than the Christie strain. Occasionally inoculated animals did not develop fever, but it was possible to demonstrate that Q fever complement-fixing antibodies had developed in these as well as in the febrile guineapigs.

In guineapigs killed during or after the febrile period no abnormality could regularly be found except enlargement and increased friability of the spleen. No rickettsiæ could be demonstrated in Giemsa-stained smears from peritoneum or spleen.

Guineapigs inoculated with large numbers of viable organisms of the Christie or M1 strain in suspensions of infected yolk sac developed a more severe illness with a shorter incubation period (one to six days) and longer fever (table I). Although no deaths resulted from inoculation of the Henzerling strain in this way, most of the animals infected with English strains died either at the height of the fever or after the temperature had returned to normal for several days.

Post-mortem examination after these late deaths revealed the most marked changes. There was usually emaciation, an enlarged and friable spleen, congestion and thickening of the peritoneum with a scanty blood-stained exudate, and in most instances a patchy consolidation of both lungs. Giemsa-stained smears from the peritoneum revealed large numbers of extracellular and intracellular rickettsiæ (fig. 1). Microscopically there was a perivascular cuffing of small blood-vessels by macrophages and lymphocytes, particularly in the lung and liver. This change was mainly around the portal vessels in the liver and was sometimes accompanied by a localised periportal necrosis. There were occasionally areas of frank mononuclear-cell consolidation in the lung, but rickettsiæ could only rarely be seen in Giemsa-stained sections. The surface of the spleen showed a well-marked mononuclear-cell exudate, in which intracellular rickettsiæ could be seen in large numbers, but the organisms were also present in macrophages in the substance of the spleen.

Mice inoculated with heart-blood from guineapigs infected with the Christie strain remained well, but those inoculated with heavily infected yolk-sac suspensions died in twelve to fourteen days with peritoneal exudate and enlarged spleens.

Growth in the Fertile Hen's Egg

The English strains of *R. burneti* resembled most other pathological rickettsiæ in their ability to multiply freely in the yolk sacs of fertile hen's eggs.

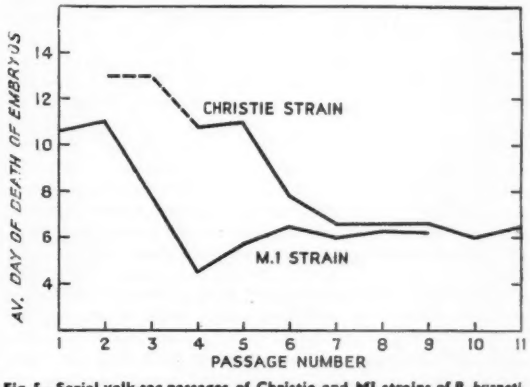

Fig. 5—Serial yolk-sac passages of Christie and M1 strains of *R. burneti*, showing average day of death of embryos at each passage. (Passages 2 and 3 of the Christie strain included survivors 14 days after inoculation.)

Yolk-sac passage of the Christie strain was started at the Central Public Health Laboratory, Colindale, London, from first-passage guineapig spleen and was continued in Cambridge from a yolk sac of the first egg passage at Colindale. Cultivation of the M1 strain in yolk sacs was started by inoculation of a 10% spleen suspension from the 5th guineapig passage of this strain.

The Henzerling strain was reconstituted from a lyophilised suspension of infected yolk sac and inoculated directly into eggs.

During the early passages of the Christie strain at Cambridge (2nd and 3rd egg passage) most of the eggs survived. After the 4th egg passage, however, all inoculated eggs died, and the interval between inoculation and death was gradually reduced until after the 6th passage when the average remained at six to seven days after inoculation of 50% yolk-sac suspension (fig. 5).

Egg adaptation of the M1 strain was more rapid, and even in the early passages all the eggs died. The average day of death fell to four days in the 3rd passage, but thereafter remained like the Christie strain at six to seven days. Under similar conditions the Henzerling strain, already adapted to growth in eggs, usually killed the embryos four to five days after inoculation.

Very large numbers of rickettsiæ were visible in Giemsa-stained smears from the 2nd passage of the M1 strain and the 5th passage of the Christie strain. These organisms were almost entirely extracellular and they resembled rickettsiæ seen in stained smears of the Henzerling strain, but in smears of English strains there was a greater tendency to aggregate into clumps. These clumps were of varying sizes and usually unattached to host cells, though the organisms may have been lying in pieces of cytoplasm which had broken away from disintegrating and heavily infected cells. The degree of clumping varied from egg to egg through all passages of the English strains but was more noticeable than with the Henzerling strain.

Size of the Organism

The size of the Christie-strain organisms was estimated by filtration and by direct measurement of particles photographed with an electron microscope.

Three batches of a 2% suspension of heavily infected yolk sac were passed through gradacol membranes with average pore diameters of 640 mμ, 400 mμ, and 190 mμ. Into each of 4 guineapigs, from which a sample of blood had previously been taken, 2·5 ml. of each filtrate was

TABLE II—RESULTS OF FILTRATION OF CHRISTIE STRAIN OF *R. burneti*

Average pore diameter of filter	Guineapig nos.	Complement-fixing titre with Q-fever antigen	
		Before inoculn	After inoculn
190 mμ	2029, 30, 31, 32	All < 1 : 5	All < 1 : 5
400 mμ	33, 34, 35, 36	All < 1 : 5	All > 1 : 20
640 mμ	37, 38, 39, 40	All < 1 : 5	All died of Q fever

inoculated intraperitoneally. Two weeks later all the guineapigs which had been inoculated with the 640 mμ filtrate died. Large numbers of rickettsiæ were present in peritoneal smears, no bacteria could be isolated from the spleens, and it was assumed that these animals had died of Q fever. The remaining guineapigs were bled a month after inoculation, and both pre-inoculation and post-inoculation specimens of serum were examined for Q fever complement-fixing antibodies (see table II). None of the guineapigs inoculated with the 190 mμ filtrate had serological evidence of infection, but all those inoculated with the 400 mμ filtrate had developed antibodies since inoculation.

The organism therefore passed a 400 mμ filter, and this implies that some infective particles had a diameter of less than about 300 mμ.

Direct measurements by electron microscopy were made on purified suspensions of rickettsiæ which were to be used as antigens. Figs. 2, 3, and 4 (on plate) show gold-shadowed organisms of the Christie and Henzerling strains. The strains resemble one another closely and have the typical structure of rickettsiæ as seen under the electron microscope. They are mostly cocco-bacillary in form with an irregular central core surrounded by a flat apparently collapsed zone and a well-marked limiting membrane. Fig. 4, with the greatest magnification, shows one organism whose central portion seems to consist of a twisted thread-like structure.

TABLE III—RESULTS OF CROSS-IMMUNITY TESTS WITH THREE STRAINS OF *R. burneti* IN GUINEAPIGS. FIGURES INDICATE DURATION OF FEVER IN DAYS FOR INDIVIDUAL ANIMALS

Challenging strain	Duration of fever			
	Normal guineapigs	Guineapigs previously infected with—		
		Christie	M1	Henzerling
Christie ..	2, 3, 3, 5, 7, 7, 7, 7	..	0, 0, 0, 0, 0	0, 0, 0
M 1 ..	4, 4, 5, 5, 7	0, 0, 0, 0, 0, 0	..	0, 0
Henzerling	2, 2, 3	0, 0, 0	0, 0, 1	..

Eighteen Henzerling and eleven Christie strain organisms were measured. The mean for the Henzerling strain was 600 mμ × 210 mμ, and for the Christie strain 600 mμ × 200 mμ, so there was no significant difference in the mean sizes of the two strains, though there was considerable individual variation in size and shape in both strains.

SEROLOGICAL TESTS

Cross-immunity Tests

Cross-immunity tests between the three strains were carried out in groups of guineapigs which had been infected with *R. burneti* during the routine passage of the strains. At various times these guineapigs had all shown a typical febrile response after the primary inoculation. Two to eight weeks later they were challenged by intraperitoneal inoculation of the heterologous strains; 2 ml. of 1 : 1000 yolk-sac suspension of each strain was used for the principal experiment, but in a preliminary test 2 ml. of infected guineapig heart-blood was the inoculum. Re-inoculation with the homologous strains was not performed. Guineapigs with no previous exposure to *R. burneti* were inoculated as controls. The rectal temperatures were recorded for three weeks and it was assumed that a temperature of over 103·5°F occurring more than two days after inoculation indicated infection.

The duration of fever in days is recorded in table III. It will be seen that all the normal guineapigs developed fever lasting two to seven days. The immunised guineapigs remained afebrile during the whole three weeks, except for 1 animal previously infected with the M1 strain which developed fever ten days after re-inoculation with Henzerling strain. With this exception there was complete reciprocal cross-immunity between the three strains.

Complement-fixation Tests

As soon as the English strains of *R. burneti* were sufficiently adapted to growth in fertile eggs, antigens were prepared from formolised suspensions of heavily infected yolk sacs. The rickettsial suspensions were purified by a modification of Topping's technique used by Wolfe and Kornfeld (1949).

This consists of high-speed centrifugation of 20% yolk-sac suspension and overnight cold ether extraction of the resuspended deposit. The aqueous phase, which contains the

rickettsiæ, is again centrifuged and treated with cold ether overnight. This is followed by repeated ether treatment at room-temperature until no interphase is present between the ether and aqueous layers. The rickettsiæ in the aqueous layer are finally washed three times by high-speed centrifugation and resuspended in 1/15th of the original volume of buffered formol saline. This results in a concentrated and highly purified preparation of rickettsiæ.

Convalescent serum from Dr. A. C. Christie, from whom the strain was isolated, was used as a standard antiserum, but guineapig antisera were also used. Tests with antigen were generally put up in a chessboard fashion.

Antigen prepared from the Henzerling strain has been used throughout for routine diagnosis of Q fever and for epidemiological studies. Different batches of antigen when titrated with Christie serum produce almost identical antiserum titres and antigen titres varying from 1 : 40 to 1 : 160. The optimal antigen concentration is usually 1 : 10 or 1 : 20.

The first antigens made from the Christie strain (egg passage 6) and the M1 strain (egg passage 4) were rickettsial suspensions which looked microscopically at least as pure and as concentrated as Henzerling strain antigens. Despite this they reacted poorly or not at all with Christie antiserum. Tests with a Christie strain guineapig serum also showed much higher serum titres with Henzerling than Christie antigen, and at this stage it was thought that the English strains might resemble the Panama or the Dyer American strain which react poorly even with homologous antisera.

Further passage of the Christie and M1 strains in yolk sacs, however, eventually yielded rickettsial antigens which did react with Christie antiserum, though the antigen titres were lower than those given by the Henzerling strain. Table IV shows the results of a titration of Christie serum in the presence of Henzerling antigen, Christie strain antigen from passages 6 and 11, M1 strain antigen from passages 4 and 5, and an antigen prepared by the same technique from normal yolk sacs (inoculated with 10% horse serum broth). Except for the normal egg antigen, which was completely clear, the suspensions were matched to a standard opacity and checked microscopically so that they contained approximately equal numbers of rickettsiæ.

TABLE IV—COMPLEMENT-FIXATION TESTS WITH DILUTIONS OF HUMAN CONVALESCENT SERUM AND OF VARIOUS Q-FEVER ANTIGENS OF COMPARABLE RICKETTSIAL CONCENTRATION

Antigen	Dilutions of antigen 1 in	Dilutions of Christie serum 1 in							
		5	10	20	40	80	160	320	640
Henzerling	undil.	+ +	+ +	+ +	+ +	+ +	+	−	−
	2·5	+ +	+ +	+ +	+ +	+ +	+ +	−	−
	5	+ +	+ +	+ +	+ +	+ +	+ +	−	−
	10	+ +	+ +	+ +	+ +	+ +	+ +	±	−
	20	+ +	+ +	+ +	+ +	+	−	−	−
	40	+ +	+ +	+ +	+	±	−	−	−
	80	−	−	−	−	−	−	−	−
Christie—Passage 6	undil.	+	−	−	−	−	−	−	−
	2·5	+	−	−	−	−	−	−	−
	5	+	−	−	−	−	−	−	−
	10	±	−	−	−	−	−	−	−
Passage 11	undil.	+ +	+ +	+ +	+ +	+ +	−	−	−
	2·5	+ +	+ +	+ +	+ +	+ +	+ +	−	−
	5	+ +	+ +	+ +	+ +	+ +	+ +	−	−
	10	+ +	+ +	+ +	+	+	±	−	−
	20	±	−	−	+ +	−	−	−	−
	40	−	−	−	−	−	−	−	−
M1—*Passage 4 ..	undil.	−	−	−	−	−	−	−	−
	2·5	−	−	−	−	−	−	−	−
	5	−	−	−	−	−	−	−	−
*Passage 5 ..	undil.	+ +	+ +	+ +	−	−	−	−	−
	2·5	+ +	+ +	+ +	+	−	−	−	−
	5	+	+	−	−	−	−	−	−
	10	−	−	−	−	−	−	−	−
Normal Egg ..	2·5	−	−	−	−	−	−	−	−

* Not in same series.

The Christie antiserum reacted to 1 : 160 with the heterologous Henzerling antigen, but only to 1 : 5 with the homologous Christie antigen made from the 6th yolk-sac passage. After a further five passages in eggs, however, Christie antigen produced the same antiserum titres as the Henzerling antigen, though the antigen titre was only 1 : 10, compared to a Henzerling antigen titre of 1 : 40. Fourth-passage M1 strain antigen did not react at all with Christie serum, but 5th-passage antigen (not in the same egg-passage series) reacted at low antigen and antiserum dilutions.

It is possible that, despite precautions, the English strains became contaminated by the Henzerling strain during yolk-sac passage. This explanation is unlikely because the mean day of death of the adapted English strains remained at six to seven days, whereas under similar conditions the Henzerling strain generally killed the embryos in about four days.

These titrations were all put up together and the earlier passage antigens had therefore been stored at 2°C for longer than the antigens made from later passages. The early passage antigens, however, had also been tested immediately after preparation with the same negative results. There was no apparent difference in morphology or numbers of rickettsiæ seen in Giemsa-stained smears of the original yolk sacs or of purified antigens from either early or late passage.

Assuming that the rickettsial suspensions were of approximately equal concentration and purity, the results suggests that there was some change in antigenic structure during passage of the English strains in eggs, with the result that the sensitivity of the antigens was greater after increasing egg adaptation.

DISCUSSION

Under laboratory conditions the two strains of rickettsiæ isolated in England closely resemble other known strains of *R. burneti*, and in particular the Henzerling Italian strain. They caused a typical febrile illness in guineapigs, with development of specific antibodies, and animals which had previously been infected with either of the English strains were immune to the classical Henzerling strain, and vice versa. The rickettsiæ grew freely in the yolk sac of fertile eggs, and no difference in morphology or size between strains could be detected even by electron microscopy. The Christie strain was found to pass through gradacol membranes with an average pore diameter of 400 mμ, a feature which differentiates *R. burneti* from other pathogenic rickettsiæ.

During normal passage the illness caused by English strains in guineapigs was very mild and resembled that caused by the Henzerling strain, so that in this respect they probably differ from the American strains. When heavily infected yolk-sac suspensions were inoculated intraperitoneally, however, the English strains often killed the guineapigs while those inoculated with the Henzerling strain survived. The English strains also differed from the Henzerling strain in their lethal effect on eggs. Even after eleven passages the Christie strain took an average of six to seven days to kill embryos, whereas the Henzerling always took four to five days. This was probably due to the much longer period of laboratory adaptation which the Henzerling strain had undergone.

A further difference between the English and Henzerling strains associated with egg adaptation was their behaviour as complement-fixing antigens. Despite the presence of large numbers of rickettsiæ, purified antigens from early passages of the English strains failed to react with homologous human antiserum except in very low dilutions, though the Henzerling antigen reacted to high

titre. When antigens of similar rickettsial concentration were made from later passages of English strains, they reacted satisfactorily with homologous antiserum. It is possible that egg adaptation brought about a change in antigenic structure characterised by increased sensitivity as complement-fixing antigens. This might be of practical importance because the preparation of satisfactory antigens would depend on egg adaptation considerably past the passages where large numbers of rickettsiæ were first visible in stained smears. Judging by antigens prepared at this stage the English strains resembled the Dyer-Panama low-sensitivity group of Topping et al. (1946), but after further passage the increased sensitivity made this supposition untenable.

A difference between the two English strains themselves was in adaptation to growth in yolk sacs. This was much more rapidly achieved by the M1 strain from milk than by the Christie human strain, but this might have been due to the greater number of guineapig passages undergone by the M1 strain before transfer to eggs. Judging by the shorter incubation period and longer fever, the M1 strain was also slightly more pathogenic for guineapigs. These differences, between two strains only, may not be significant, but Dr. E. H. Lennette informs me in a personal communication (1950) that he and his group in California have also found that strains of *R. burneti* isolated from milk adapt more easily to yolk sac and guineapig than strains from humans or ticks.

These minor strain characteristics of *R. burneti* isolated in Britain do not give any clear indication of a closer relationship to either European or American strains. In fact, the known characteristics of different strains of *R. Burneti* are probably too indefinite to permit such an identification.

SUMMARY

Two strains of *R. burneti* isolated in Great Britain have been studied under laboratory conditions. The Christie strain was obtained from a patient and the M1 strain from a pool of raw milk collected in an endemic area. These strains have been compared with the classical Henzerling strain isolated from a patient in Italy.

In their morphology, size, and general behaviour in guineapigs and fertile hen's eggs the British strains resembled the classical strain. There was also reciprocal cross-immunity between all three strains in guineapigs.

Minor differences between the strains were detected. Judging by incubation period and length of fever, the British milk strain was more pathogenic for guineapigs and also adapted itself more rapidly to growth in fertile eggs than the human strain. Even after adaptation to eggs, however, the British strains took longer to kill the embryos than the classical strain.

Complement-fixation tests showed that antigens made from the classical strain reacted with antisera against British strains. These British antisera, however, would not react with antigens made from either British strain until the strains had undergone several yolk-sac passages. This effect was not related to the numbers of rickettsiæ in the antigens and suggested a change in antigenic structure during egg adaptation.

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IMMEDIATE RETROPUBIC PROSTATECTOMY IN ACUTE RETENTION

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IMMEDIATE prostatectomy for acute retention of urine has been extensively practised by Wells and others, using the Wilson Hey technique of suprapubic dissection with excision of the trigone. In selected cases the retropubic method can also be used with satisfactory results, as advocated by Walters (1949).

In the present series not all the patients with acute retention of prostatic origin underwent retropubic prostatectomy. The small fibrotic gland and the obviously malignant case were dealt with by transurethral resection. Adequate general physical capacity, assessed more from the patient's recent history than by any special clinical tests, was also an essential prerequisite. Provided the patient was still ambulant and active up to the onset of retention, operation was not necessarily refused because of chronic bronchitis or signs of cardiovascular degeneration. The blood-urea was estimated in all the cases. Generally a figure over 100 mg. per 100 ml. was taken as a contra-indication to immediate prostatectomy, but a few cases were operated on successfully with blood-ureas considerably higher than this. Patients with obvious urethritis due to repeated catheterisations before admission were not subjected to immediate prostatectomy. Using these criteria the operation was performed in about 70% of all patients admitted with acute retention of prostatic origin. Age in itself was no contra-indication, the oldest patient being 83.

PREOPERATIVE MANAGEMENT

When the patient was in great discomfort, a suprapubic spinal needle was inserted on admission, but there may be considerable extravasation of urine into the retropubic space if operation is not done within a few hours.

Latterly all the patients received streptomycin, the first dose of 0·5 g. being given an hour before operation, as advocated by Wilson Hey. All of them had their blood grouped, but none received transfusion or infusion before operation, and only a minority needed transfusion after it.

OPERATIVE TECHNIQUE

Nearly all the operations were performed under a minimum cover of spinal anæsthesia. Preliminary cystoscopy was routine to exclude stricture, stone, diverticulum, &c. The transverse suprapubic incision was preferred. In most cases after dissection of the prostate gland and v excision of the bladder neck a no. 4 rubber catheter was led from the prostatic bed through the fundus of the bladder on to the abdominal wall, as described by Adams (1949). With the Harris catheter in situ the small transvesical catheter can be used to maintain a constant drip washout of citrate and later saline solution during the first twenty-four hours after operation. Later a similar safeguard against clot retention was achieved by threading a no. 14 F ureteric catheter along the lumen of the Harris catheter, thereby obviating the small transvesical tube.

COMPLICATIONS

The postoperative course was usually smooth, but clot retention, suprapubic leakage, and postoperative incontinence were all encountered.

Of the 60 patients treated by retropubic prostatectomy clot retention occurred in 4. In 2 it was overcome

transurethrally with the evacuator. The other 2 required cystotomy, and 1 of these subsequently died of uræmia despite intensive treatment.

Convalescence in several cases was delayed by suprapubic leakage but was invariably overcome by inserting an indwelling catheter for a few days. Serious wound infection with persistent fistula was not encountered.

Incontinence for a short time was common but it persisted in only 2 cases.

In 1 case it was impossible to find a plane of cleavage at operation. When the prostate gland was eventually enucleated, a portion of the prostato-membranous urethra was seen to have been avulsed with the gland mass. The technical difficulties of the operation were subsequently explained by the histological report, which revealed malignancy.

The other case of persistent incontinence was in a man, aged 65, with simple hypertrophy. Periodic instrumentation had no beneficial effect, and five months later he was readmitted and underwent transurethral resection of residual tags. However, this was only partially effective, and he still has recourse to a penile clamp.

The prostate was examined histologically in all cases: 5 proved malignant, and 1 was equivocal. Clinical examination in these 5 patients had never aroused more than a suspicion of malignancy; so the incidence of latent carcinoma was 8%. But this is rather less than in some of the published series.

The average length of stay in hospital was twenty-one days, but this does not do justice to the method, since this figure includes patients whose stay was prolonged by factors which would have operated against them whatever the method of therapy. For instance, one developed acute retention after the plating of a fractured tibia, another had multiple vesical calculi, and several were retained because of concomitant respiratory disease. Moreover, the patients' relatives could not always be persuaded to welcome them home as soon as the wound was healed. Most of them were fit for discharge in twelve to sixteen days.

MORTALITY

Of the 60 patients treated in this way during twelve months, 4 died, giving a mortality-rate of 6·7%. One man, aged 74, died within a few hours of operation apparently from shock; necropsy revealed bilateral hydronephrosis and pyelonephritis. Another death occurred from pulmonary embolism in a man aged 75 who had been catheterised intermittently for three days before admission. A third death, due to uræmia following clot retention, occurred on the thirteenth postoperative day in a man aged 67. The fourth death was due to postoperative bronchopneumonia in a man aged 81.

CONCLUSION

A mortality-rate of nearly 7% may be regarded as too high to justify this method of treatment. However, with one exception all the deaths were in men considerably over the age of 70. Moreover it should be possible to reduce the death-rate somewhat as the selection of cases becomes more familiar; only 1 death occurred in the last 32 of the series.

The relatively high incidence of clot retention is possibly related to the engorgement of the prostate gland consequent on the advent of acute retention.

The considerable reduction in length of stay in hospital seems to justify extended trial of immediate operation.

My thanks are due to Mr. A. W. Adams, director of the genito-urinary department, United Bristol Hospitals, who has had charge of the cases described and performed most of the operations.

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RESISTANCE TO CHLORAMPHENICOL DEVELOPING DURING TREATMENT OF TYPHOID FEVER

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MOST of the published reports on the treatment of typhoid fever with chloramphenicol describe relapses, but none of them seems to have demonstrated an increased drug-resistance of the organisms during the relapse. Indeed, Good and Mackenzie (1950) and Rankin and Grimble (1950) showed in their cases that the sensitivity to chloramphenicol remained the same in cultures obtained before, during, and after treatment and relapse.

We report here a case of typhoid fever which relapsed during treatment with chloramphenicol and in which increased drug-resistance of the infecting organism was established.

CASE-RECORDS

A married male nurse, aged 43, who had never received T.A.B. inoculation, was admitted to the Royal Infirmary, Sheffield, on Feb. 27, 1950 with two weeks' history of malaise followed by persistent fever, rigors, pains in the knee-joints, and occipital and retro-orbital headache. His appetite had been poor, and his bowels, normally regular, had been constipated for a week. In the two weeks before admission he had received courses of sodium salicylate and sulphadimidine ('Sulphamezathine') without any improvement.

On admission his temperature was 104·2°F, pulse-rate 98, and respirations 20 per minute. He was haggard, ill, faintly cyanosed, resistant, and uncoöperative, and resented questioning and examination. No rash was present; the tongue was moist and moderately furred. The heart was not enlarged and the heart sounds were pure. The blood-pressure was 124/72 mm. Hg. The activity of the alæ nasi was obvious, but no abnormal signs were present in the lungs. The abdomen was not tender or distended, and the spleen was not palpably enlarged. No abnormality was detected on rectal examination.

Investigations.—Blood-count on day of admission: Hb 15·5 g. per 100 ml. (105%), red cells 4,970,000 per c.mm., and white cells 4000 per c.mm. (polymorphs 51%, lymphocytes 41%, monocytes 6%, eosinophils 2%). Erythrocyte-sedimentation rate (E.S.R.) 6 mm. in 1 hr. (Wintrobe)).

Urine: trace of albumin; sterile on culture.

Radiography of chest: only "increased lung markings" at right base.

Blood-agglutinations (Feb. 28): *Salmonella typhi* O, 1/320; H, 1/1280; Vi, 1/60.

Blood-culture (Feb. 28): pure growth of *S. typhi*.

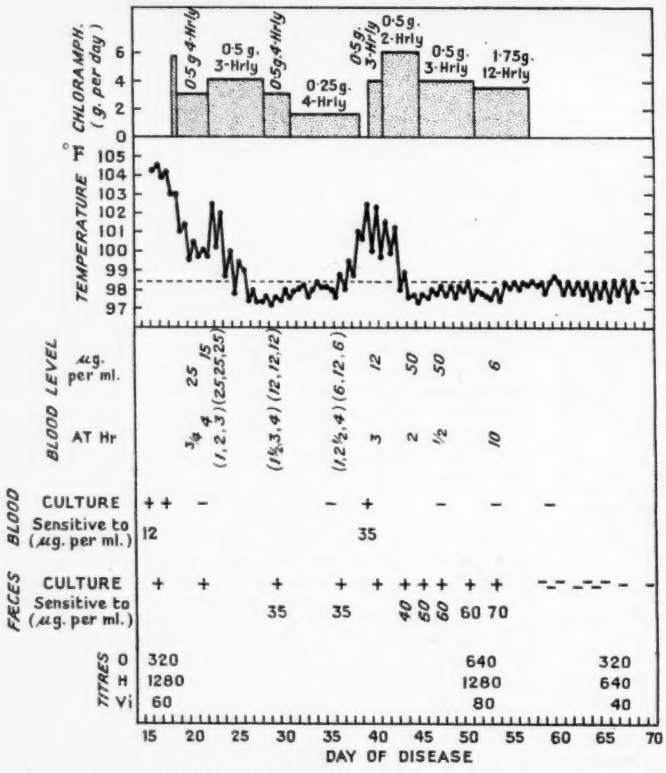
Fæces (March 1): a heavy growth of *S. typhi* sensitive to 12 µg. of chloramphenicol per ml.

Treatment and Progress.—In the interval of two days between collection of the blood samples and establishment of the diagnosis, penicillin was given intramuscularly in full doses without any improvement. On March 1 rose spots appeared on the patient's abdomen. His fever persisted, he began to pass frequent liquid stools, and his general condition deteriorated.

Chloramphenicol was started on March 2, 2 g. being given in the first two hours and then 0·5 g. four-hourly.

On March 3 the patient was cold and collapsed; blood-pressure 100/60 mm. Hg. He became increasingly confused and uncoöperative, and drip feeding by indwelling gastric tube was instituted because he refused to drink and would not swallow tablets. Definite signs of consolidation now developed at the right lung base, and radiography confirmed the presence of right basal pneumonia. Pyrexia continued, and on March 7 the chloramphenicol was increased to 4 g. daily. Blood-culture was negative for *S. typhi* on this date.

In the next few days the patient's temperature fell steadily, and by March 10, eight days after the start of chloramphenicol, though he was still readily dyspnœic, he could take solids and fluids by mouth and his temperature was normal for the first time since admission. On March 12 the dosage of



Dosage, temperature, blood levels at various times after doses, and sensitivity of organism, showing increasing resistance to chloramphenicol.

chloramphenicol was reduced to 3 g. daily, and three days later to 1·5 g. daily, because the patient had vomited several times.

On March 17 he complained of a sore tongue, and it was red and raw, with some angular cheilosis. 'Marmite' was added to his diet and this condition quickly cleared. By the 18th his diarrhœa had given place to constipation, and glycerin suppositories were required. His clinical condition was now excellent. He had been afebrile for nine days, the physical signs in his chest were resolving satisfactorily, and on March 20 a blood-culture was negative, though the fæces still grew *S. typhi*.

Chloramphenicol was stopped at 8 P.M. on March 22, though at 6 P.M. the patient's temperature had risen to 101°F. Next day it was 103·4°, and he had mild abdominal discomfort but the only abnormal findings were minimal generalised tenderness and a doubtfully positive Murphy's sign, and his general condition seemed satisfactory. Blood-cultures were positive for *S. typhi* on this day and the next (March 23 and 24). Chloramphenicol was therefore restarted on the evening of the 23rd, in doses of 3 g. daily, and it was increased to 6 g. daily on the 25th after a bacteriological report of the increased resistance of the organism to the drug from 12 to 35 µg. per ml. had been received. The patient's fæces continued to grow *S. typhi* as they had since admission. His fever settled promptly after the reinstitution of chloramphenicol therapy, and by March 28 he was again apyrexial. On this day a specimen of sputum was for the first time sent for laboratory examination; no *S. typhi* was found. There were now no abnormal physical signs in the chest or abdomen, and the chloramphenicol was reduced to 4 g. daily, and seven days later to 3·5 g. daily and continued in this dose until April 11 (fifteen days after the relapse) when it was discontinued.

S. typhi was present in the fæces until April 6 (the fifty-second day of disease), when in spite of its increased drug-resistance (see below) the organism disappeared from the stools and remained absent from eight successive daily specimens. The patient was now convalescent. He felt well, and radiography of his chest on April 24 showed complete resolution of the pneumonic lesion. He was discharged from hospital on April 27.

BACTERIOLOGY

Methods.—The *S. typhi* isolated by blood-culture was sent to Dr. A. Felix, F.R.S., of the Central Enteric Reference Laboratory and Bureau, who reported that the organism belonged to an untypable Vi strain.

The sensitivity of the various cultures was estimated by inoculating dilutions of standard chloramphenicol in phenol-red glucose serum water (May et al. 1947) with the organism under test. The chloramphenicol assays were made by comparing serial dilutions of the test serum and of standard chloramphenicol in the above-mentioned medium inoculated with *B. cereus* (Lederle no. 5).

In the Widal tests the *S. typhi* H antibody was estimated by Dreyer's technique, the *S. typhi* O by the Felix technique, and the *S. typhi* Vi by the technique recommended by the Standards Laboratory, Colindale.

Progress.—During the first thirty days of the man's illness a heavy growth of *S. typhi* was obtained from his fæces even by direct plating on MacConkey's medium. On the thirty-sixth day, a moderate growth of the infecting organism was obtained by the use of desoxycholate medium. From the thirty-ninth day, *S. typhi* was isolated only with the aid of 'Selenite F' medium, and the fæces yielded very few colonies on the last three occasions when the organism was isolated.

DISCUSSION

The case reported here is interesting from several points of view and raises further problems in the chloramphenicol treatment of typhoid fever.

In the first place, the organism isolated before treatment was sensitive to 12 µg. and resistant to 10 µg. per ml.—a much higher resistance than any yet reported, so far as we can determine. Thus Edge (1950) found that all the tested organisms in his cases were sensitive to 2·5 µg. and resistant to 1·5 µg per ml. Secondly, increased resistance to chloramphenicol was first shown, by the organism isolated from the fæces on March 14—nine days before the relapse. When the relapse occurred the patient was virtually still under treatment, since chloramphenicol was stopped for less than twenty-four hours, and indeed the man's temperature started to rise two hours before the last dose was given. Further, positive blood-cultures were obtained from samples collected on the second and third days of the relapse. The second of these samples contained 12 µg. of chloramphenicol per ml., and the resistance of the organisms isolated from these two cultures had increased to 35 µg. per ml.

In the published reports on the treatment of typhoid fever with chloramphenicol there has been no suggestion that drug-resistance played any part in the failure of treatment or in the occurrence of relapses. Yet the present case suggests that some relapses may be due to acquired resistance, and that strains of *S. typhi* may be encountered which require very large doses of chloramphenicol for successful treatment. Hence in our view, the sensitivity of the organism and the serum-chloramphenicol level should be estimated in every case as a guide to dosage, and where this is impracticable the dosage should be that calculated to produce a serum level of not less than 50 µg. per ml.—i.e., 4–6 g. daily.

Chronic typhoid carrier states following chloramphenicol therapy have recently been reported (Douglas 1950, Good and Mackenzie 1950). In view of the increased resistance of the organism in our case, it seems that patients who become chronic typhoid carriers after chloramphenicol treatment may be excreting an organism with a greatly heightened resistance to the drug.

Further, in all the reported cases of typhoid fever treated with chloramphenicol the organisms continued to be excreted in the fæces during treatment although apparently adequate blood-chloramphenicol levels were being maintained. The work of Glazko et al. (1949) may possibly explain this finding. They have shown by chemical methods that 80–92% of the chloramphenicol ingested is excreted in the urine, though only 5% is in a biologically active form. On this evidence, effective concentrations of the antibiotic may not be obtained in the bowel, since only 8–20% of the total dosage is left to be excreted in the fæces. The current dosage of chloramphenicol probably produces a sufficient blood-level to kill organisms in the intestinal wall via the blood-stream. But organisms that are imbedded in debris and necrotic material, or in the contents of the gut, may be bathed in a solution of chloramphenicol whose concentration is below their sensitivity level so that the more resistant organisms will continue to multiply and may later reinvade the tissue and produce a relapse. The use of an unabsorbable form of chloramphenicol, or its administration in enteric-coated capsules, as a supplement to the present treatment might therefore be more effective in clearing the intestine of the organisms and might help to prevent relapse and the development of the chronic carrier state.

SUMMARY

In a case of typhoid fever successfully treated with chloramphenicol the initial sensitivity of the infecting organisms (12 μg. per ml.) was higher than any so far reported.

During a relapse *S. typhi* isolated by blood-culture and from the fæces showed increased resistance to chloramphenicol (35 μg. per ml.).

A possible explanation for the relapse is put forward, and it is suggested that the usual chloramphenicol therapy should be supplemented by the concurrent administration of an unabsorbable form of the antibiotic.

We wish to thank Dr. A. W. D. Leishman, under whose care the patient was admitted, for permission to publish; Profs. E. J. Wayne and C. P. Beattie for helpful advice and criticisms; Mr. A. S. Foster, medical artist of the Royal Infirmary, Sheffield, for preparing the chart, and the technicians of the department of bacteriology, Royal Infirmary, Sheffield.

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FLAME PHOTOMETRY

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THE solubility of sodium and potassium salts makes their estimation by chemical means both slow and uncertain so that by the time the results are known they have often lost much of their value. The clinical application of the rapid and accurate methods of flame photometry has therefore proved of great advantage in the diagnosis and treatment of metabolic disorders in medicine, pædiatrics, and surgery. Flame photometry determines the concentration of certain metallic elements by the photo-electric measurement of the intensity of their characteristic emission spectra, produced when dilute solutions of their salts are sprayed at a constant rate into a standard flame. By this method several determinations can be made in a few minutes with greater accuracy than can be obtained in as many hours by standard chemical techniques.

Balance studies of diabetic acidosis (Atchley et al. 1933), gastro-enteritis in infants (Butler et al. 1933), starvation (Benedict 1915), and the complex biochemical disorders that may follow surgery (Berry et al. 1948), have led to a better understanding of the gross intracellular deficits of protein, potassium, and phosphate which accompany so many clinical conditions of severe dehydration. Recovery is best aided by the controlled administration of solutions designed to restore simultaneously the acid-base balance, the extracellular losses, and the more easily replaced portion of the intracellular deficits (Butler and Talbot 1944). These three processes of recovery are inseparable. Such treatment requires a more precise knowledge of the total metabolic disorder than can be obtained from single electrolyte estimations on the urine and plasma.

Chloride determinations on the urine are sometimes valuable guides to diagnosis and treatment (Marriott 1947), but they do not necessarily reflect the balance of chloride and sodium in the body. Patients with Addison's disease (Loeb 1932, 1933) or with salt-losing nephritis (Peters and Wakeman 1929) become depleted of extracellular fluid by the uncontrolled loss of water, sodium, and chloride in the urine. Again, when there is excessive katabolism, as in acidosis or following surgical operations, the patient may continue to lose chloride, sodium, phosphate, and potassium in the urine even when seriously depleted of all those electrolytes. Thus, in some metabolic disorders, chloride appears in the urine of salt-depleted patients. The opposite phenomenon of low urinary chlorides associated with an excess of salt in the body is widely recognised in established congestive heart-failure, but it is also sometimes discovered before failure is apparent. Fatal pulmonary œdema may follow if the low urinary chloride is interpreted as evidence of salt-depletion and saline is given intravenously. In the treatment of diarrhœa and vomiting of infancy it is especially important to remember that in very early life the kidneys are unable to form a urine containing a high concentration of chloride (McCance and Young 1941).

Single estimations of electrolytes in the plasma are of limited value, for they do not indicate the balance of electrolytes in the body. This is especially true of the plasma-potassium, which may be raised in patients whose cells are depleted of potassium—for example, in untreated diabetic acidosis (Martin and Werkman 1947, Nadler et al. 1948). Furthermore, when dehydration and hæmoconcentration are severe, particularly in infancy, high values may be found for the plasma-electrolytes, in face of a general bodily deficit.

For the precise diagnosis and controlled treatment of disturbances of the body-fluids, a series of electrolyte estimations on the plasma and on all materials entering and leaving the body is essential to determine the biochemical patterns of disorder and recovery. These are the requirements of metabolic research. Experience gained from such detailed metabolic studies is invaluable to the clinician in the biochemical assessment, and more routine treatment, of patients when less data are available. It is neither possible nor necessary to make these intensive studies on every patient. But when intracellular losses are to be replaced by the intravenous administration of complex solutions containing potassium, careful electrolyte estimations are highly desirable.

The flame photometer meets this need for rapid and accurate determinations of sodium and potassium. The method has, however, many possible sources of error which may not be widely known. If undetected, these entirely invalidate the results obtained and may cause the instrument to fall into disrepute. Such errors can be avoided if proper precautions are taken in the design and operation of the photometer.

The following account of the principles, construction, and operation of a flame photometer is based on personal

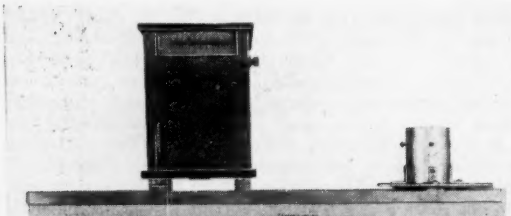


Fig. 1—Combined direct and internal standard flame photometer.

experience with an instrument that has given reliable service in several thousand determinations, on published work (Gerlach 1925, Lundegardh 1929, 1934, Berry et al. 1946), and on discussions with other workers in this field.

PRINCIPLES

The physical basis of flame photometry is complex, but a brief study of the main principles will suffice for practical purposes.

When an atom is heated one of its electrons absorbs the added energy and jumps to an outer orbit, where it rotates at a higher energy level. This electron is now in an unstable position and tends to spring back to the orbit from which it came. As it returns, it emits as light the difference in energy required for rotation in the two orbits concerned. The intensity and wave-length of the light is related to the position and energy level of the moving electron. Hence, each element, when heated in a flame under standard conditions, emits a characteristic light spectrum not given by any other element.

However, when energy is supplied at greatly different rates—i.e., at widely different temperatures—one element may produce a series of different emission spectra according to the number of orbiting electrons available in its atoms to absorb the energy supplied At very high temperatures the outer electron may leave the field of the nucleus altogether, and an additional or ion spectrum will then be produced. Thus, the higher the temperature the more complex the spectra become. In the hydrogen-air flame only the most easily excited spectral lines —the first atomic spectra of the alkali and the alkaline earth metals—are produced. The flame must be sufficiently hot to vaporise the compounds to be analysed. In the solid phase, continuous or band spectra are produced which are useless for analytical purposes.

At high temperatures interference phenomena occur between spectra of different elements. For example, with an oxyacetylene flame at 3500°C the presence of sodium increases the apparent intensity of the characteristic potassium emission. This effect is minimal at 1800°C in the hydrogen-air flame.

An emission spectrum may to some extent be absorbed by atoms of another element, and well-marked specific absorption occurs when unheated atoms of the same element are present. Both these effects are minimised by dilution. But in flame photometry the flame must supply energy at a sufficient rate to excite all the atoms delivered to it. Otherwise, the non-radiating atoms will immediately absorb the light emitted by those that have been excited.

The main conditions for quantitative flame photometry may be summarised as follows. A solution of the test material, appropriately diluted, is delivered at a uniform rate to a flame of constant energy output. After vaporisation a variable number of atoms will thus be excited, and each atom will emit a constant amount of light of a characteristic wave-length. This light is concentrated and selected by a suitable optical system, converted into electrical energy by a photocell, and measured by a galvanometer.

In *direct flame photometry* a single optical system and one photo-electric cell are used, so that the deflection of the galvanometer is a measure of the intensity of the emission spectra and of the concentration of the elements in the heated specimen.

In *internal standard flame photometry* a constant proportion of lithium is added to all the test and standard solutions. By the use of a double optical system and matched photo-electric cells the ratio of two different spectra is measured under conditions such that any uncontrolled variation in the emission of one element is balanced by a similar alteration in that of the lithium internal standard element. It will be shown later that this internal standard technique compensates for many of the serious errors which limit the value of direct flame photometry in the analysis of complex biological fluids.

How these principles are applied to the design and operation of a combined direct and internal standard photometer is described below. The diagrams (figs. 1–3) are drawn to scale, so that the dimensions of the apparatus, none of which is critical, may be obtained by measurement.

CONSTRUCTION OF THE PHOTOMETER

Emission spectra are produced by spraying into the flame an " atomised " aqueous solution of the materials to be examined. The heat rapidly evaporates the minute droplets of water and vaporises the compounds in solution. These are now in a gaseous phase so that characteristic emission spectra are produced.

The design of the atomiser is one of the most important considerations in the construction of a photometer. The rate of atomisation must be constant and the droplet size uniformly small. The atomiser must be easy to clean. In the best type a concentric flow of fluid and air produces a conical mist of nearly uniform particle size, and 10–15 ml. of the test solution is atomised per minute, using 8 litres of compressed air

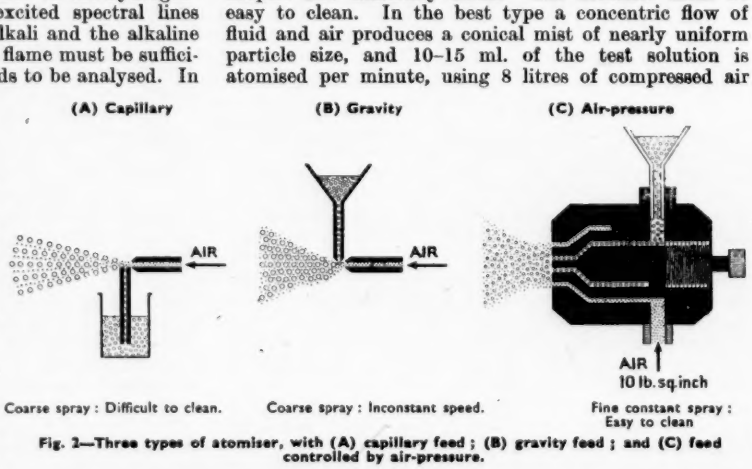


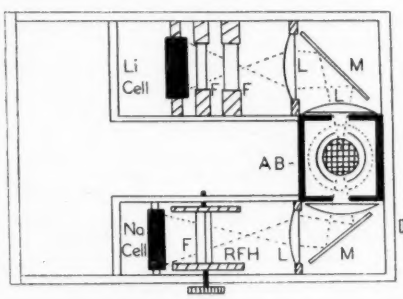
Fig. 2—Three types of atomiser, with (A) capillary feed ; (B) gravity feed ; and (C) feed controlled by air-pressure.

when the pressure is 15 lb. per sq. in. The rate of atomisation is largely governed by the air-pressure, which is readily controlled. Some types of atomiser with gravity or capillary feeds produce coarse droplets at very inconstant rates (fig. 2). The compressed air, which must be free of oil and dust, is delivered to the atomiser through an adjustable constant-pressure valve connected to a pressure-gauge registering from 0 to 20 lb. per sq. in.

The spray passes directly into a glass or plastic chamber (SC in fig. 3*b*), designed to eliminate any coarse droplets, which condense and leave the instrument through the constant-pressure trap (T). The compressed air, now containing only very fine droplets, passes from the spray chamber through a short wide tube into a narrow metal preheating cylinder (SC2) which surrounds the burner (B). It is essential that the spray should enter this cylinder tangentially and at a level above the air-holes in the burner, otherwise the flame will be blown out.

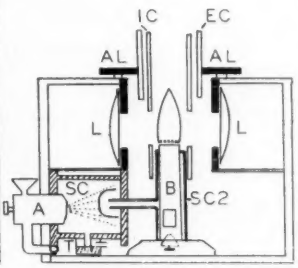
A flame supplying a constant amount of energy is obtained by using a large Fisher-type burner, with adjustable gas-jet and a fine mesh nickel grid. The supply of gas is controlled in the same way as the compressed air. As a rule coal gas, at a pressure of 7 cm. of water, is used, but butane or acetylene (pressure 7 lb. per sq. in.) may be used with the appropriate burners. Coal gas is satisfactory for the estimation of sodium and potassium, provided that it burns with a colourless flame and the mains pressure is high and relatively constant. The flame is protected from cold air by two concentric metal chimneys (IC and EC) and by a larger asbestos fire-box (AB). Narrow windows permit light from the central zone of the flame to pass out into the optical systems, but exclude light from the top, base, and edges of the flame. This system of flame protection and ventilation keeps the flame hot and steady and the rest of the photometer cool. This cooling effect is important because the output from selenium photo-electric cells varies widely with temperature changes. In this instrument a dial thermometer monitoring the air immediately around the photocells records temperature variations which are consistently less than 2°C. If temperature control is less precise, an electric heater with thermostatic control should be installed.

The double optical systems of mirrors (M in fig. 3), condensing lenses (L), and filters (F) are arranged to focus light of selected wave-length on to the photocells. Final adjustment is determined by trial to obtain the maximum galvanometer deflection with a given test solution. The whole of the optical system must be light-tight and coated internally with jet-black paint.



(*a*)

Fig. 3*a*—Plan of flame photometer with top removed.
AB = Asbestos fire-box.
M = Front-surfaced mirror.
L = Heat-resisting Fresnell lenses.
F = Filter.
RFH = Rotatory filter holder.
Li Cell = Photo-electric cell for lithium.
Na Cell = Photo-electric cell for sodium and potassium.



(*b*)

Fig. 3*b*—Side view of photometer with end removed.
A = Atomiser.
SC = Plastic spray chamber.
T = Constant-pressure trap
B = Fisher burner with nickel grid.
SC2 = Preheating chamber.
L = Fresnell lenses.
EC = External chimney.
IC = Internal chimney.
AL = Asbestos louvres.

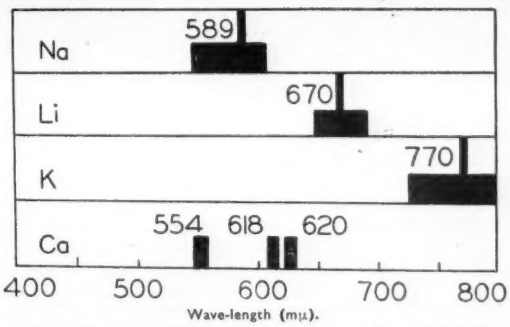


Fig. 4—Relation of emission spectra to transmission of filters.

Combinations of thick glass filters select the regions of the spectrum emitted by sodium, potassium, and lithium. Along one optical path the filters for lithium are kept constant. On the other side the filters for sodium and for potassium are mounted on a drum (RFH), which is turned to select the required filter combination. An iris diaphragm is incorporated along the light path for sodium. To exclude sodium light from the photocells when potassium or lithium spectra are to be measured, a special interference or cut-out filter is used. It is essential to make detailed spectrophotometric tests on the completed instrument to ensure that the spectrum given by any one element is completely removed by the filters used during estimations of the other elements. This requirement is met in the photometer described, except that calcium emits a number of bands which are passed to a small extent by the filters used in estimating sodium (fig. 4). The resulting error is so small that it can only be detected when the concentration of calcium in the solution under test is more than ten times that of sodium. Interference filters provide a very precise method of spectral selection and also have the advantage of transmitting more light

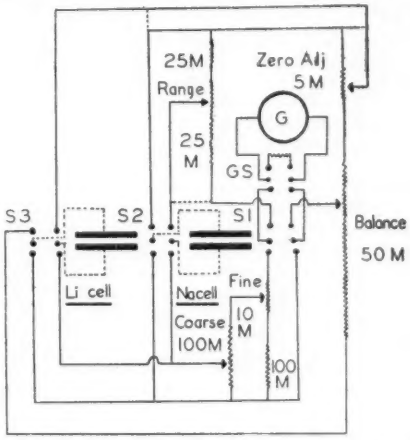
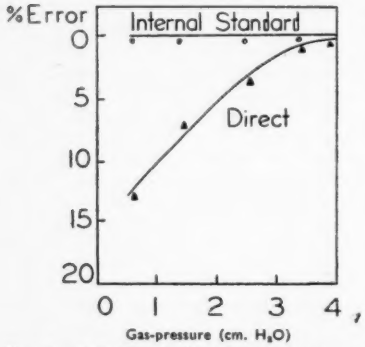


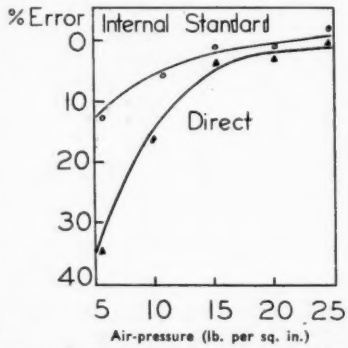
Fig. 5—Electrical circuits. S 1, 2, and 3 = Two-pole double-throw switches. G = Galvanometer. Balance = Accurate balancing potentiometer. M = 1000 ohms resistance.

than combinations of glass filters.* Spectral selection by means of a diffraction grating or a prism-and-slit mechanism requires a much higher degree of precision than can be obtained in the average workshop.

Large selenium barrier-layer photo-electric cells of matched output have been used in this instrument because they have a broad spectral response, are free from drift and fatigue, and have a relatively high output at low intensities of illumination. Most selenium cells are not sensitive to light of a wave-length longer than 650 mμ and are therefore useless for measuring the emission spectra of lithium and potassium. It is possible to obtain red-sensitive photocells, and for photometry those with the largest output at 770 mμ should be chosen. The output of the cells should be such that, with the instrument switched to the direct circuit, a solution containing 0·5 m.eq. of potassium per litre will produce a full-scale deflection of the galvanometer. A biased circuit may be used when very low light intensities are encountered.

Phototubes may be used in place of the selenium cells, but these require a long warming-up period before use. Their output is comparatively low, so they require a stable form of amplification. Photomultiplier tubes may be used, but these require a well-regulated electric power supply and also take a considerable time to reach a stable output.





Figs. 6 and 7—Effect of variations in gas-pressure and air-pressure on accuracy of direct and indirect flame photometry.

The electrical circuit shown in fig. 5 is designed for use with selenium cells. The two-pole double-throw switches enable the instrument to be used either as a direct or as an internal standard instrument. The wire-wound linear rheostats allow different voltages to be tapped off the cells, and thus act as fine and coarse sensitivity selectors. When used on the internal standard circuit the photocells oppose each other, and a balance or null-point reading is obtained by turning the potentiometer dial until the galvanometer is steady at zero.

A highly sensitive galvanometer is essential. The one here has a sensitivity of 0·0005 microamps per mm., a period of 4 sec., an internal resistance of 4000 ohms, and a critical external damping resistance of 50,000 ohms. A galvanometer-shorting switch should be incorporated in the circuit.

OPERATIONAL INSTRUCTIONS

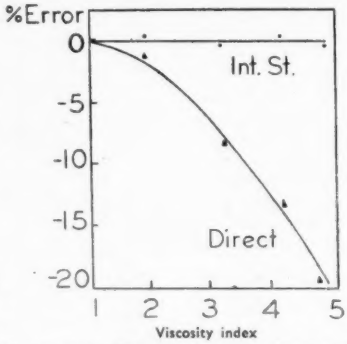
Direct Flame Photometry

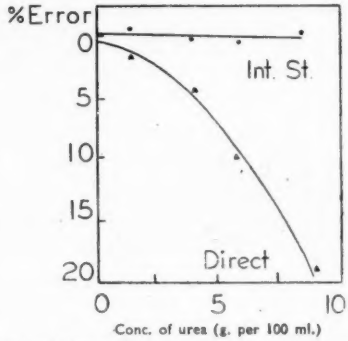
To ensure a stable zero, the galvanometer is switched on 10 minutes before use. The gas is lit and the pressures of air (15 lb. per sq. in.) and gas (5 cm. of water) are adjusted to give a steady sub-blast type of flame. The selector dial is turned to provide the appropriate filters. Distilled water is poured into the atomiser funnel and the galvanometer is adjusted to zero. The solution to be tested is now poured in and the sensitivity dial is turned until a suitable galvanometer reading is produced. Readings are obtained for two standard solutions (all standard solutions must be kept in hard-glass bottles) of the same element, one slightly more concentrated and the other slightly more dilute than the unknown solution. By interpolation between these two standard readings the concentration of the unknown solution is obtained. By using four or more standards a calibration curve can be constructed, and with solutions up to 0·5 m.eq. per litre this should be linear. Above this concentration the galvanometer reading will not be directly proportional to the concentration, because specific absorption by non-radiating atoms of the same element occurs in the flame. If a calibration curve is used, it is essential to construct a new one for each series of estimations and to check the readings repeatedly during the series of observations.

With simple dilute solutions (less than 1 m.eq. per litre) the accuracy of the estimations obtained is ± 3%. However, small variations in the pressures of gas or air will produce a very large error (figs. 6 and 7). Furthermore, the viscosity of the test solutions modifies their rate of atomisation and hence the galvanometer readings obtained (fig. 8); with many biological fluids—e.g., plasma diluted less than 1 in 50—a correction for viscosity is therefore essential. In complex solutions non-specific absorption by other elements is pronounced. The presence of organic molecules, such as urea, in the solutions also interferes with estimations (fig. 9), and some acids (e.g., nitric acid, fig. 10) strongly inhibit spectral emission. Thus the many possible sources of error make direct flame photometry a very uncertain method of analysing biological fluids. Fortunately, many of these difficulties can be overcome by internal standard flame photometry (Berry et al. 1946).

Internal Standard Flame Photometry

Lithium is the most suitable element for the internal standard because it seldom occurs in biological fluids, it is closely related to sodium and potassium, and it gives an intense line spectrum midway between these two elements. A constant proportion of lithium (1 in 20,000) is added to all the standard solutions and to those of





Figs. 8 and 9—Effect of changes in viscosity of test solution and presence of urea on accuracy of direct and indirect photometry.

*Since this paper was written interference filters with a transmission band width of less than 10 mμ have become available, and these are now in use.

unknown concentration that are to be tested. The potential produced by the selected lithium light falling on one photocell is opposed by a similar potential from the opposite cell, which is excited by the sodium or the potassium light. These E.M.F.s are balanced by an accurate potentiometer, and a calibration curve is constructed by plotting the potentiometer readings against the concentration of the standard solutions.

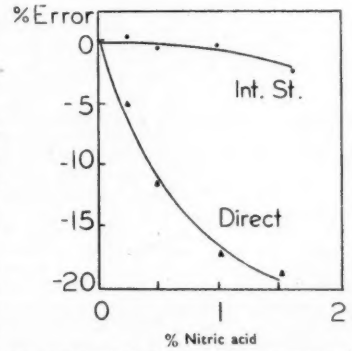


Fig. 10—Effect of nitric acid on accuracy of direct and indirect photometry.

Many of the non-specific sources of error which interfere so greatly with direct flame photometry equally affect the emission of the lithium and of the sodium or potassium spectra. Such effects will now be opposed by the balance technique and largely cancel out. It can be seen from figs. 6–10 that the device of an internal standard compensates for any small variations in the pressures of gas or air (figs. 6 and 7); for changes in viscosity of the test solutions (fig. 8); for the effects of some organic molecules (fig. 9); and for the absorption caused even by dilute solutions of nitric acid (fig. 10).

This method does not eliminate all possible sources of error. Solutions of carbohydrates emit a continuous band spectrum of carbon, which gives falsely high readings for sodium. In estimating the sodium content of solutions containing sugar in concentrations over 0·01% the carbohydrate must always be oxidised completely before testing. Studies on the effect of protein in the test solutions have been made by the use of albumin rendered almost electrolyte-free by electro-dialysis. Albumin in concentration of less than 0·05% has a negligible effect on internal standard flame photometry. Hence it is possible to estimate sodium and potassium in plasma without previous precipitation of the proteins, provided the plasma is diluted by the addition of 100 or more parts of water. Urine, if suitably diluted, can be analysed directly; but with tissues, diets, and stools complete oxidation of organic matter by boiling with concentrated HNO_3 is an essential preliminary step.

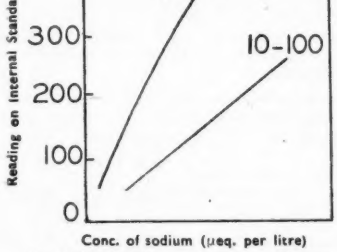


Fig. 11—Calibration curves for indirect flame photometry over wide range of sensitivities.

With suitably prepared solutions the accuracy of sodium and potassium estimations by the internal standard technique is within ± 1·5%, over a concentration range of 0·01–1·0 m.eq. per litre (fig. 11). New developments are under trial by means of which calcium and other elements may be estimated, even in the presence of a large excess of sodium.

Although the techniques described provide simple, accurate, and rapid means of estimating sodium and potassium in complex biological fluids, it is absolutely essential for the operator to have a sound knowledge of the theoretical principles if he is to avoid the many practical difficulties. In every new application of flame photometry it is wise to check the initial results against those obtained by standard chemical methods.

SUMMARY

The principles, design, and operation of a combined direct and internal standard flame photometer are described.

Some of the many possible sources of error in flame photometry are discussed together with the methods for avoiding them.

Flame photometry is an accurate and rapid technique for estimating the concentration of sodium and potassium in aqueous solutions or in plasma or other complex biological fluids, and is a great convenience in clinical medicine, pædiatrics, and surgery. Despite the apparent simplicity of the method it is unsuitable for the use of unskilled or uncritical workers.

The work described in this paper was done during the tenure of a Bilton Pollard Fellowship from University College Hospital, and a Research Fellowship at the College of Physicians and Surgeons, New York.

I wish to express my thanks to Prof. M. L. Rosenheim for his help in the preparation of this paper, to Prof. Robert F. Loeb, of the College of Physicians and Surgeons, New York, for his encouragement and financial aid, and Dr. G. H. Mudge and Dr. C. L. Fox for their ready advice and assistance.

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Reviews of Books

Atlas of Mahfouz's Obstetric and Gynæcological Museum

NAGUIB PACHA MAHFOUZ, M.CH., F.R.C.O.G.(Hon.), F.R.C.P., F.R.C.S.(Hon.), consultant obstetric and gynæcological surgeon, Kasr-el-Ainy Hospital; consulting surgeon, Kitchener's Memorial Hospital; director of the Gynæcological Department of the Coptic Hospital. Altrincham, England: John Sherratt & Son. 1949. Pp. about 1250. Set of 3 vols., £9 9*s*.

THIS atlas is an illustrated catalogue of mounted pathological specimens in the Mahfouz Obstetric and Gynæcological Museum in Cairo. The museum, containing almost 1300 specimens, is the work of Mahfouz Pasha, who operated on most of the cases himself. In the preface he says: "In passing from one stage to another I have given a description of the pathological anatomy of the parts concerned. In subjects of which I have made special studies I have described the clinical features and the operative procedures I perform and have given an historical review showing the evolutions which gradually developed into our present-day conception of these diseases." He hopes that the atlas will prove useful to advanced students who propose to specialise in gynæcology and obstetrics and who are already familiar with ordinary textbooks.

The strength of the book lies in its wealth of material, especially concerning such conditions as rupture of the uterus, chorionepithelioma, and concealed accidental

hæmorrhage. The case-histories are clear, concise, and instructive, and the discussions on such subjects as rupture of the uterus are most interesting. In dealing with the management of fibroids complicating pregnancy the value of conservative treatment is emphasised. (In a country like Egypt, where the patient still hesitates to consult a doctor, or sometimes to take his advice, there is an opportunity to demonstrate what can be accomplished by "masterly inactivity." In some parts of Britain, where many of these serious complications are now seldom seen, there may be a tendency to over-treat those which do occur.) On the other hand there are surprisingly few specimens illustrating eclamptic toxæmia, and those which do appear are not entirely satisfactory. Throughout the book the paintings are technically excellent, and many of the drawings are very good; but they suffer from the fact that they depict the appearance seen in the jar at the time they were painted or drawn and not the appearance seen at the time of operation when the specimens were obtained. The result is that the paintings are not life-like and some of the drawings are difficult to follow because the specimen has become wrinkled. This is a great pity in view of the great variety of unusual cases available. Some of the photomicrographs are likewise disappointing, the histological detail being poor and the fields not always well chosen.

Though the author says that this book is for advanced students, much of the more systematic discussion is elementary and rather out of date. For example, he states that "the most common cause of fœtal death is intoxication through the maternal circulation. This may be of bacterial origin such as syphilis, malaria, auto-infection, etc., or due to metabolic disease such as diabetes or albuminuria or to the toxæmias of pregnancy. Syphilis is by far the most important antenatal disease which leads to death of the fœtus." The general effect of this unevenness in the standard of writing is that the really important cases and the instructive discussions are hidden away in the systematic text and among statistics which by their very nature cannot be very helpful.

Any such book is open to criticisms, and if this monumental work has shortcomings they must not be allowed to obscure its real value. It consists of three volumes printed on fine paper and illustrating conditions which in this country the obstetrician seldom sees. Dr. Mahfouz is to be congratulated on bringing so great a labour to a worthy conclusion.

John Hunter

S. ROODHOUSE GLOYNE, consulting pathologist, London Chest Hospital and King Edward VII Sanatorium, Midhurst. Edinburgh: E. & S. Livingstone. 1950. Pp. 104. 15*s*.

IN little compass the late Dr. Gloyne has contributed a notable study of a much studied man. He draws what one feels must be a true picture of Hunter's strange character—a man of rough (even coarse) fibre, with little book-learning, with much to say yet little able to express his thoughts; but a man moved by a passionate desire to understand facts and with an intellect which many times led him straight to the truth. It is the peculiar value of this book that it places John Hunter's figure against a vividly painted background of the London life of his time—on one side indescribable squalor, on the other gaiety and fashion moving in sedan chairs to the opera or Vauxhall. The teacher of anatomy and surgery was more often in contact with the squalor than with the refinement of the 18th century. While John Hunter's charming wife could enjoy the friendship of Mrs. Montague and of Fanny Burney, her husband was forced by circumstance to take part in the unsavoury transactions of the resurrection men. The stench of the crowded dissecting-rooms, housed in makeshift cellars or outhouses, was such that dissection became a seasonal occupation, impossible and abandoned in the heat of summer.

The book is without explanatory footnotes, and there are no detailed references given to quotations from other works. But as it stands, both in style and in matter, it is a little masterpiece of medical biography.

Coronary Circulation in Health and Diseases

DONALD E. GREGG, M.D., chief research physician, medical department, Field Research Laboratory, Fort Knox, Kentucky. London: Henry Kimpton. 1950. Pp. 227. 31*s*. 6*d*.

Dr. Gregg, approaching his subject as a laboratory and research worker, deals most fully with coronary flow in animals, first under basal conditions as nearly physiological as possible, and then under the influence of various factors which determine alterations in flow. It seems doubtful, from the observations discussed, whether there is any evidence of direct nervous control of the coronary calibre, or of the influence of drugs (the nitrites excepted); for both nerves and drugs affect the work of the myocardium, with metabolic consequences which closely control the coronary circulation. The last chapter deals with the histology of coronary lesions, the methods by which they may be produced experimentally, and their effects. Abnormal lipoid metabolism is not thought to be a factor in most cases of coronary obstruction; the various drugs used with the object of preventing ventricular fibrillation are probably ineffective; and the possibility that any drug can limit the size of an infarct in man seems to be remote. Dr. Gregg has repeatedly to conclude that the views and statements of others are unwarranted or unproved. The result is a review in which the reader can feel confidence even if it lessens his hope of improving coronary blood-flow with most of the drugs proposed for the purpose.

Progress in Chromatography, 1938-47

L. ZECHMEISTER, California Institute of Technology, Pasadena, California. London: Chapman and Hall, 1950. Pp. 367. 45*s*.

THE ten years covered by Professor Zechmeister's review have seen much new invention and adaptation in the field of chromatography. Partition chromatography, preparative and analytical, in columns or on paper strips, has been known for only a few years, but these methods are now at least as important as the original adsorption technique.

After a general section devoted to principles and methods, the author has provided a compendium of actual experimental detail, dealing with chlorophyll; porphyrins; bile pigments; carotenoids; miscellaneous natural pigments; synthetic dyestuffs; miscellaneous aliphatic substances; lipoids; carbohydrates; amino-acids and peptides; sterols and some steroids; terpenes and some related compounds; benzene, naphthalene, diphenyl, diphenyl-alkyl and the indene series; heterocyclic compounds; alkaloids; vitamins; antibiotics; enzymes; and miscellaneous biological substances. He also discusses inorganic chromatography, and the applications of chromatography to technology.

Ten years is too long to wait to review this rapidly expanding field, and we hope that Professor Zechmeister will repeat this signal service in five years' time.

Essays in the History of Medicine

GEORGE GASK, C.M.G., D.S.O., F.R.C.S. London: Butterworth. 1950. Pp. 209. 30*s*.

THIS volume of eight essays will be welcomed by all students of medical history. Every one of them has something new to say and every one shows evidence of careful research.

For instance John Hunter's experiences as an army surgeon in Portugal, recounted in the sixth essay, are probably little known even to those who know much of the history of his later life. It is interesting to find that, a hundred years before Florence Nightingale astonished the world, the hospital with 202 patients in which he served was equipped with a regular establishment of women nurses, including a matron, 2 head-nurses, and 18 nurses—1 nurse to every 10 patients. Nothing is to be learnt of the training of these women; but on Aug. 9, 1762, the Adjutant-General wrote to the Commander-in-Chief that it would be unwise to discharge any of the nursing staff "as their places cannot be supplied in an emergency." This suggests that they possessed some skill which could not be replaced by untrained women hurriedly impressed. Professor Gask thinks it likely that they were recruited from the London hospitals. Things seem to have been better not only after, but also before, the Crimea.

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THE LANCET
LONDON : SATURDAY, NOV. 25, 1950

Balances

THE Ministry of Health's decision to reduce the number of registrars prompts three questions : Is this necessary ? Is it fair ? And can the hospitals still be run efficiently ?

If future registrars, having finished their training, are really to have a reasonable chance of a consultant post, then a cut of some sort is inevitable ; for even if the consultant services were considerably expanded the present numbers would be too great. We have all hoped for such expansion, and with unlimited resources of money the arguments for undertaking it would be irresistible. But the resources of the health service are very far from being unlimited ; they are, in fact, not much more than sufficient for maintenance. Last March Sir STAFFORD CRIPPS, as Chancellor of the Exchequer, declared in the plainest terms that the nation was spending as much as it could afford on its health service ; we could not, he declared, exceed the present rate of expenditure. Moreover, in this as in other countries, the cost of providing medical care and especially hospital care is rising year by year. Thus if the present restriction on spending is retained—and the inflationary pressure of rearmament makes it virtually certain it will be—we may soon be thinking, not of where the service should be expanded, but of where it can least harmfully be contracted. Economies are of course possible, but it is broadly true that no part of the service can now be substantially developed except by withdrawing money from some other part. Repeatedly this journal has urged that the right policy for the next few years is to concentrate especially on improving the kind of medical care that can properly be given outside hospital, and for this purpose to improve the conditions of general practice. Facing the economic facts, we cannot simultaneously join in the demand that consultant establishments should now be increased. Indeed, if no personal hardships were involved, we should not be sorry to see the body of general practitioners strengthened by many able men and women, some of whom are good general doctors as well as good specialists : we should not be sorry, that is to say, if we thought that the conditions of practice would permit them to do good work.

Unfortunately, as things stand, very real hardship is in prospect for hundreds of registrars, no longer in their first youth, who will now have to make a fresh start. Many of them recognised from the first that they risked more than their predecessors in similar posts ; and this awareness has gradually become more acute ; for example, last year, at the opening meeting of the B.M.A. registrars' group, members heard it suggested that only 1 in 5 of senior registrars would gain a consultant appointment. Yet by usage the registrar should have a fair chance of advancement, which is now to be denied him. Here the profession itself bears some responsibility ; for restraint in claims for registrars, together with professional advice to hospital authorities, might have helped to keep the numbers within bounds ; and the vigour with which the cuts have been denounced might equally have been applied to inhibiting the earlier heedless growth. Where the Ministry of Health has been at fault is in failing to give its facts sooner and to secure agreement on what should be done. A year ago we remarked that registrars had too long been kept in the dark about their prospects, and we called on the regional boards to furnish what illumination they could. The boards, we understand, were asked some time ago to review establishments in order to restore some sort of balance ; but most of them preferred to leave the initiative to the Ministry itself. The reduction, now that it is on us, is startling more for its abruptness than its extent.

This abruptness is likely to handicap most severely the former municipal hospitals, some of which have gained immensely from having registrars added to their medical complement ; and the regional reviewing committees will have to ensure that the claims of these hospitals (provided they are compatible with proper training) are not overshadowed by those of teaching hospitals. The expert clinical assistants on whom the Ministry seems to rely to fill the gap are unlikely to be found where they are wanted and as soon as they are wanted ; and as Dr. BARNARD notes in his letter on another page, these assistants, even when they are appointed, may not live near enough to the hospital to give all the help of which they are capable. There is a further and very serious difficulty which will not take shape until the regional reviews are completed in the New Year. The Ministry's intention is apparently to relate registrarships in each subject to the probable openings ; and if this policy is carried through the number of registrars allowed to continue in such popular subjects as general surgery will be far below the number implied by the over-all reduction already announced. General surgery is one of the subjects in which the registrar may be giving indispensable help ; and in this, and possibly other, subjects the proposed balancing of registrar numbers against probable consultant vacancies may cause serious loss of efficiency which can only partly be warded off by the extension for one year of the tenure of senior registrars. Indeed, while the new restricted establishment, equated to consultant vacancies, is likely to provide a fair deal for the next generation, it will be unfairly small for the hospital service, for three different reasons :

1. The number of consultants having steadily increased during the past two or three decades, the number of vacancies per annum (to which the number of registrars is to be related) is less than the number of consultants divided by the average number of years they work. In other words, because thirty years ago fewer consultants were appointed, there are now fewer vacancies than the present total might suggest.

2. The upper age-limit in the health service has been set at sixty-five, and in many places this has had the effect of extending for five years the working life of those who would otherwise have retired. This again keeps down meanwhile the number of vacancies.

3. Some consultants who have passed the age of sixty-five are still doing valuable work in the hospitals.

The conclusion is inescapable that, unless many recently upgraded hospitals are to be deliberately downgraded, some of their specialised work will have to be done by doctors who have no further expectation of becoming consultants. Ways have to be found by which it can be done well and willingly, and by which the transit of many hospital registrars into general practice can be made at least tolerable. The need here is for constructive suggestions, and we welcome those put forward by Dr. TALBOT ROGERS on p. 641.

Q Fever

THOUGH it may be one of the rarer infectious diseases, Q fever is attracting world-wide attention, partly because of its remarkable and varied epidemiology and partly because of the unorthodox character of the causative organism, *Rickettsia burneti*.

Clinically it has few striking characteristics, and it must be sought among patients with "pyrexia of undetermined origin" or with "primary atypical pneumonia." Generally the illness begins abruptly with a particularly severe headache, sometimes accompanied by photophobia. The headache may indeed be so intense that meningitis is suspected, but a spinal tap rarely reveals an increase of cells in the cerebrospinal fluid. There is high fever, and profuse sweating as the temperature fluctuates from 103–4°F to normal during the course of a day or less. "Burning eyes," lacrimation, and conjunctivitis may add to the patient's discomfort, but he has none of the upper respiratory symptoms of "influenza" or "febrile catarrh." The illness lasts on the average some twelve days, the temperature falling by lysis. Between the third and sixth days, or thereabouts, there may be a little cough, and on careful examination a few fine râles will be heard in the chest; but the signs are slight in relation to the extent of the lung lesion revealed by X rays. Pneumonia is present in about 70–80% of patients, including some of those with a very mild general illness; in fact in one large outbreak [1] radiography was used for discovering cases. But Q fever is more than an infection of the lung: *R. burneti* can be recovered from the blood-stream during the fever and from the urine during early convalescence, and consequently lesions may be spread widely. MOESCHLIN and KOSZEWSKI,[2] in 50 cases with serologically proven Q fever, reported 9 with complications (5 thrombophlebitis with pulmonary embolism, 3 epididymitis, 1 encephalitis, and 1 pancreatitis). All these extrapulmonary complications appeared after the fourteenth day of illness, when the lung lesion was resolving. The findings of WHITTICK,[3] who in a fatal case demonstrated rickettsiæ in the lung, spleen, brain, testis, and kidney, suggest that the lesions outside the lungs are probably due to the rickettsia itself. This occurrence does much to modify an impression, gained largely from studies of the disease in young and healthy troops, that Q fever is necessarily benign and trivial. Convalescence is often marked by loss of weight, muscular pains, lassitude, and easy fatiguability which can last three months or longer. In some patients this vague disability is punctuated by a genuine relapse with fever and a return of the original symptoms, and a few have had relapses occasionally for years.[4]

A tentative diagnosis of Q fever can be confirmed by isolating the organism or by demonstrating the highly specific complement-fixing antibodies which appear in the serum during convalescence. In this country the Virus Reference Laboratory of the Public Health Laboratory Service, examining sera from some 700 patients with acute infective respiratory disease, found that about 3% had a significant titre to *R. burneti*.[5] Of the 300 patients clinically diagnosed as having "atypical or virus pneumonia," there was serological evidence of infection with influenza virus in 16%, with a virus of the psittacosis-ornithosis group in 2%, and with *R. burneti* in 5%; while 11% had either cold hæmagglutinins, *Streptococcus MG.* agglutinins,[6] or both. Cold and *Strep. MG.* agglutinins were rarely observed in association with a positive specific complement-fixation test for influenza, psittacosis-ornithosis, or *R. burneti*. It seems, therefore, first that *R. burneti* is not a common cause of atypical pneumonia in Great Britain, and secondly that the likelihood of any particular case of atypical pneumonia being one of Q fever is small if the patient has a positive cold hæmagglutinin or *Strep. MG.* agglutinin test.

Cases of Q fever have now been found in Kent, Devon, Somerset, Gloucestershire, Wiltshire, Denbighshire, and Oxfordshire. Papers in our columns have described the detection of the first cases,[7] the clinical features of the cases,[8] and the isolation [9] of *R. burneti* from one of the patients; and a few months ago we reviewed the epidemiology of the disease.[10] This week we publish communications on the properties of some English strains of *R. burneti*, and on the spread of the disease in one of the outbreaks. The story of how infection passed from a patient to a ward nurse and three members of the staff of the pathological department at the Royal Cancer Hospital is of interest because human-to-human spread of infection is rare in Q fever. Infection of persons performing a necropsy is perhaps rather a special instance of case-to-case spread which has occurred elsewhere,[4 11] but infection of ward staff is exceptional, though DEUTSCH and PETERSON [12] have lately recorded an incident in a Californian hospital when three nurses developed Q fever from fourteen to twenty-three days after first attending a patient with the disease. The infectiousness of a minority of cases of Q fever is not fully explained, but it is possibly related to the severity of the illness, to the amount of sputum produced, or to the cleanliness with which urine is passed. The "source case" at the Royal Cancer Hospital was producing sputum and was incontinent of urine at the end of his illness, and though DEUTSCH and PETERSON do not say whether their patient was producing sputum he was

1. Feinstein, M., Yesner, R., Marks, J. L. *Amer. J. Hyg.* 1946, **44**, 72.
2. Moeschlin, von S., Koszewski, B. J. *Schweiz. med. Wschr.* 1950, **80**, 929.
3. Whittick, J. W. *Brit. med. J.* 1950, i, 979.
4. Beck, M. D., Bell, J. A., Shaw, E. W., Huebner, R. J. *Publ. Hlth Rep., Wash.* 1949, **64**, 41.
5. See *Brit. med. J.* 1950, ii, 282.
6. Thomas, L., Mirick, G. S., Curnen, E. C., Ziegler, J. E., Horsfall, F. L. jun. *Science*, 1943, **98**, 566.
7. Stoker, M. G. P. *Lancet*, 1949, i, 178.
8. Harman, J. B. *Ibid*, ii, 1028.
9. MacCallum, F. O., Marmion, B. P., Stoker, M. G. P. *Ibid*, p. 1026.
10. *Ibid*, 1950, i, 960.
11. Huebner, R. J., cited by Deutsch and Peterson (ref. 12).
12. Deutsch, D. L., Peterson, E. T. *J. Amer. med. Ass.* 1950, **143**, 348.

evidently very ill. These examples of human-to-human spread should not distract attention from the fact that most patients with Q fever seem to acquire their infection from animals, either by consuming infected raw cow's milk [13] or by inhaling dust containing *R. burneti*.[13] Until recently the sources of rickettsiæ in the dust were somewhat obscure; for only tick excreta,[14] colostrum, and milk [15] had been shown to contain the organism. But the finding of large numbers of rickettsiæ in the placenta of cows [16] and sheep,[17] and the isolation of the organism from the fæces and nasopharyngeal secretions of sheep,[17] helps to remove this difficulty. DELAY et al.[18] in Northern California provided direct proof of the presence of *R. burneti* in dust when they isolated the organism from air samples collected on a dairy farm and on a sheep ranch, where human cases of Q fever had occurred.

Treatment with chloramphenicol or 'Aureomycin' has given promising results, and a prophylactic vaccine has been prepared from killed and purified rickettsial suspensions grown in the yolk sac of the chick embryo. MEIKLEJOHN and LENNETTE [19] report that in their laboratory, though an unimmunised serologist contracted the disease, there have been no cases among immunised workers—an observation which is possibly significant in view of the notorious infectiousness of *R. burneti* in the laboratory. Controlled data on the protective effect of the vaccine might be obtained by offering inoculation to workers in industries such as slaughtering, dairying, and meat-packing, where the occupational risk of Q fever may be high.[13]

Flame Photometry

THE growing list of disorders associated with disturbances in the potassium and sodium contents of the body-fluids already includes the œdemas, uræmias, several forms of dehydration, defects in carbohydrate metabolism and in suprarenal function, and many others. Hitherto, investigators in this field have been hampered by the tedious and difficult chemical techniques used for estimating sodium and potassium in blood and urine. But thanks to the recent developments in the physical method of flame photometry these determinations can now be done simply and rapidly, and instead of being essentially research procedures they will soon be part of the routine work of a biochemical laboratory.

The flame photometer measures the intensity of light emitted when solutions of certain metallic salts are sprayed into a flame. Twenty years ago LUNDEGÅRDH [20] developed an apparatus in which the spectrum produced in this way was photographed and compared with similar spectra from standard solutions. In the various types of modern instruments [21–23] the light from the flame falls on a photocell and the spraying and burning conditions are kept constant so that the current produced gives a direct measure of the concentration of the metal in solution. Commercial models of the flame photometer are now widely used in the United States, and several British instrument-makers are exploring the possibilities of building them here. Meanwhile, many home-made instruments are already working in British hospitals, and Dr. SPENCER describes one of them in this issue (p. 623). His experience agrees with that of others [24] in showing that for estimations of the alkali metals flame photometry is as reliable as the chemical methods and it is probably more reliable in the hands of all but the most expert technicians. It also saves a great deal of time, for a technician with a photometer can easily do 20 determinations of sodium or potassium in serum in two or three hours, whereas this number of chemical estimations would take a day or more. A single determination can be completed with the flame photometer within a quarter of an hour of the laboratory receiving the blood; so in an emergency the clinician can find out his patient's serum-sodium or serum-potassium level in time to act on the information. Such rapid analyses are vital in the cases of potassium lack which may arise, for example, during recovery from diabetic coma or after diarrhœa and vomiting [25]; also in patients suffering from salt depletion as a result of low-sodium diets or mercurial diuretics [26]; and in cases of uræmia.[27]

Turning to the working details of a photometer, the solution to be analysed (plasma, serum, or urine must first be diluted with water) is blown or sucked into a carefully controlled flame burning coal-gas, acetylene, or butane. The light from the flame is passed either through colour filters, as in colorimeters, or through a spectrometer, to isolate the light of the wave-length characteristic of the metal being determined. This light then falls on a photosensitive element (a selenium barrier-layer cell or a phototube) and the current is measured, with or without amplification, on a galvanometer. The chief difficulty lies in keeping the spraying and burning conditions constant. Some flame photometers, including Dr. SPENCER's, add a known amount of some "foreign" element, such as lithium, to the solutions, so that most of the instrumental errors affect the readings from this "internal standard" as well as those from the test solutions, and are therefore cancelled out. The safest method of operation with all instruments, however, is to take readings with a standard solution of about the same strength as the test solution before or after each test. The presence of foreign elements in the solutions tested affects the light emission of sodium and potassium, and it is necessary to find out for each photometer what effects the foreign constituents of blood and urine have on the results. In some instruments sodium increases the light emission of potassium.[23 28] Interference of this kind can easily be corrected by preparing standard solutions of, say, potassium salts containing the interfering elements in the proportions present in normal serum.

13. Bell, J. A., Beck, M. D., Huebner, R. J. *Ibid*, **142**, 868.
14. Derrick, E. H. *J. Hyg., Camb.* 1943, **43**, 357.
15. Huebner, R. J., Jellison, W. L., Beck, M. D., Parker, R. R., Shepard, C. C. *Publ. Hlth Rep., Wash.* 1948, **63**, 214.
16. Luoto, L., Huebner, R. J. *Ibid*, 1950, **65**, 541.
17. Lennette, E. H. *Bact. Rev.* 1950, **14**, 249.
18. DeLay, P. D., Lennette, E. H., DeOrme, K. B. *J. Immunol.* 1950, **65**, 211.
19. Meiklejohn, G., Lennette, E. H. *Amer. J. Hyg.* 1950, **52**, 54.
20. Lundegårdh, H. G. *Die quantitative Spektralanalyse der Elemente.* Jena, 1934.
21. Barnes, R. B., Richardson, D., Berry, J. W., Hood, R. L. *Industr. engng Chem. (Anal.)*, 1945, **17**, 605.
22. Willebrands, A. F. jun. *Rec. Trav. chim.* 1950, **69**, 799.
23. Domingo, W. R., Klyne, W. *Biochem. J.* 1949, **45**, 400.
24. Hald, P. M. *J. biol. Chem.* 1947, **167**, 499. Abul-Fadl, M. A. M. *Biochem. J.* 1949, **44**, 282.
25. Leading article, *Lancet*, Sept. 9, 1950, p. 369.
26. Schroeder, H. A. *J. Amer. med. Ass.* 1949, **141**, 117.
27. Hoff, H. E., Smith, P. K., Winkler, A. W. *J. clin. Invest.* 1941, **20**, 607.
28. Proehl, E. C., Nelson, W. P. *Amer. J. clin. Path.* 1950, **20**, 806.

The simplicity of flame photometry can be illustrated by comparing the number of operations necessary for determining serum-potassium levels by this method and by the widely used chemical method of JACOBS and HOFFMANN.[29] The flame photometer requires only one reagent, and for each estimation two measurements must be made with a pipette and one reading taken of the galvanometer scale. With the chemical method four reagents are needed, and each estimation requires nine measurements of volume, two centrifugations, and one reading of a colorimeter. The stages at which mistakes can occur are roughly four times as numerous in the chemical method as with the flame photometer. The reliability of one of the home-made instruments in regular use has been tested by a quality-control method like those commonly adopted in industrial laboratories. The chemist in charge of the instrument prepared a series of standard saline solutions containing 250–350 mg. of sodium per 100 ml. to represent samples of plasma. The technician was given one of these solutions to estimate with each batch of plasma specimens, and the differences between his findings and the known concentrations were plotted on a chart. In sixteen months 150 solutions were tested in this way, with a maximum error of 6 mg. of sodium per 100 ml. and an average error of 2 mg.

The parts for building a home-made photometer cost about £100. Few of them require skilled workmanship and all the electrical components are of standard types. The saving that it will effect in labour and time seems to justify the expenditure in all large biochemical laboratories.

Cortisone and A.C.T.H. in Tuberculosis

IN the first flush of its success 'Cortisone' was tried in America in a wide variety of diseases. Since it depresses allergic phenomena in general, and skin-sensitivity to tuberculin in particular,[30 31] it seems reasonable to use it in tuberculosis. But this must be something of an adventure, for cortisone inhibits the formation of granulation-tissue [32 33] and has been shown to do so in the tuberculous guineapig [34]; it also depresses macrophage activity,[32] reduces the amount of lymphoid tissue in the body and the number of circulating lymphocytes,[35] and interferes with the formation of antibodies.[36] Even as an anti-allergic weapon it might prove double-edged, since a "rebound" increase in tuberculin reactivity has been noted in patients when the drug is stopped.[31] HENCH and his colleagues [37] briefly mention two cases of tuberculous arthritis they have treated with cortisone, and a few patients with pulmonary or laryngeal tuberculosis, mostly in the advanced stages, have been given adrenocorticotropic hormone (A.C.T.H.).[38] The results have been fairly uniform—a prompt reduction in allergic manifestations and subjective improvement while the course lasts, but doubtful amelioration or actual deterioration in the basal disease. In 13 very advanced cases, treated with A.C.T.H. plus *p*-aminosalicylic acid (P.A.S.) and streptomycin, the results were much the same as with cortisone alone—rapid transitory clinical improvement with a general feeling of well-being, but the X-ray films showed a greater tendency to cavitation.[39] More sinister potentialities of cortisone in tuberculosis are suggested by the experiments of HART and REES [40] at the National Institute for Medical Research in London. When the drug was given for 2–3 weeks to mice with a stable chronic pulmonary tuberculosis, there was a striking exacerbation of the disease and consequently a high mortality during treatment; at necropsy their lungs contained large coalescing necrotic lesions teeming with bacilli. In mice with more acute types of tuberculosis the course of the infection was also accelerated by the drug. Cortisone produces a similarly enhanced susceptibility to the tubercle bacillus in guineapigs, according to SPAIN and MOLOMUT [41]; and streptomycin given concurrently had little effect on their findings. Thus the hope that by fibrolysis cortisone might make the bacilli more accessible to antituberculous agents is not likely to be fulfilled, particularly since it apparently has no action on formed granulation-tissue.[32]

In their work with cortisone in the tuberculous mouse HART and REES have remarked that in this species, unlike the guineapig and man, hypersensitivity cannot be demonstrated by a positive tuberculin skin-test, nor is any fibrous-tissue reaction evident in tuberculous lesions; so the breakdown of resistance in the mice must be sought elsewhere—in defects of macrophage activity or lymphocytic response, or, as GREEN [42] suggests, in depression of mitosis in the formative tissues from which these and other cells concerned in resistance are derived. HART and REES point out that their dosage of cortisone was relatively high, and that a disastrous failure in resistance such as they observed in mice will not necessarily occur in man, though it should certainly be watched for. Until we have more than the meagre amount of information obtainable from the few cases so far published, the wise course will be to regard cortisone (and A.C.T.H.) as likely to do more harm than good to the tuberculous process, and to give them to tuberculous patients only for pressing other indications. A risk whose extent cannot yet be gauged is that an unrecognised or even unrecognisable tuberculous focus may be exacerbated or activated by a course of these drugs given for approved reasons, such as rheumatism or one of the "collagen" disorders. Our best defence against this danger is to examine all such patients thoroughly for tuberculous foci, including chest radiography, before starting cortisone or A.C.T.H. treatment and at intervals during and after the course. We shall then learn how far the animal results apply to man,

29. King, E. J. Micro-analysis in Medical Biochemistry. London, 1947; p. 67.
30. Long, D. A., Miles, A. A. *Lancet*, 1950, **i**, 492. Stoerk, H. C. *Fed. Proc.* 1950, **9**, 345.
31. Long, J. B., Favour, C. B. *Bull. Johns Hopk. Hosp.* 1950, **87**, 126.
32. Spain, D. M., Molomut, N., Haber, A. *Science*, 1950, **112**, 335.
33. Ragan, C., Howes, E. L., Plotz, C. M., Meyer, K., Blunt, J. W. *Proc. Soc. exp. Biol., N.Y.* 1949, **72**, 718. Aterman, K. *Lancet*, Nov. 11, 1950, p. 517.
34. Karlson, A. G. Unpublished, quoted by Hench et al. (ref. 8).
35. Antopol, W. *Proc. Soc. exp. Biol., N.Y.* 1950, **73**, 262.
36. Germuth, F. G. jun., Ottinger, B. *Ibid*, **74**, 815.
37. Hench, P. S., Kendall, E. C., Slocumb, C. H., Polley, H. F. *Arch. intern. Med.* 1950, **85**, 545.
38. Freeman, S., Fershing, J., Wang, C. C., Smith, L. C. Proceedings of 1st Clinical A.C.T.H. Conference. London, 1950; p. 509. Tompsett, R., LeMaistre, C., Muschenheim, C., McDermott, W. *J. clin. Invest.* 1950, **29**, 849.
39. *U.S. Veterans Admin. Quart. Progress Report* October, 1950, p. 23.
40. Hart, P. D'Arcy, Rees, R. J. W. *Lancet*, Sept. 23, 1950, p. 391.
41. Spain, D. M., Molomut, N. *Amer. Rev. Tubere.* 1950, **62**, 337.
42. Green, H. N. *Brit. med. J.* 1950, **i**, 1165.

without blindly risking a catastrophe. How about Addison's disease? Cortisone in small doses is said to be highly effective in this syndrome, in conjunction with deoxycortone and/or supplementary sodium chloride.[43] A careful watch should be kept on the progress of the tuberculosis, where that is the presumed cause of the Addison's syndrome, while cortisone is being given, even if the symptoms of adrenal cortical deficiency are relieved.

These remarks on cortisone probably hold good for the various crude extracts of adrenal cortex now on the market, some of which contain cortisone, though in very small amounts.

Annotations

R.H.B. AND H.M.C.

IN a short circular addressed to regional hospital boards and hospital management committees[44] the Ministry of Health explains that its resumption of the duty of approving hospital estimates, announced earlier this year, "in no way derogates from the responsibility of the boards." It is not perhaps surprising that there has been misunderstanding, and there seems to have been some difficulty in the background which the present circular does not bring clearly into the daylight. It appears to place the boards in what must seem to the outsider a somewhat unenviable intermediary position:

> "It is one of their primary functions to plan and supervise the provision of services, and therefore to assess the relative merits of various developments in their respective regions in accordance with broad considerations of regional planning. As a part of this duty the Minister relies on them to scrutinise closely and, if necessary, revise the proposals of the Committees for maintenance expenditure, and thus prepare for him reliable estimates on the basis of which the national position can be assessed and brought under review with other claims upon the budget."

After referring to the increase in knowledge and experience of financial control which has now come about, the circular continues:

> "It should now be practicable, by coöperation between officers of the Ministry and representatives of the Board, to make a sound assessment of the claims of the various hospital units in the service. In the situation now prevailing this offers the best prospects of an equitable distribution of whatever proportion of the national resources can be made available for the purpose."

The circular seems therefore to mean that the Ministry, having tried entrusting the approval of H.M.C. estimates to R.H.B.s, and then having gone into reverse, has not found either plan altogether satisfactory; and now wishes itself to settle the figures, but in discussion with the regional boards.

Have we yet found a really satisfactory system for handling these matters? There is a still growing volume of opinion in the hospitals that the whole present set-up, based on the submission of estimates under headings and their subsequent pruning, whether it be at regional or Ministry level, or both, is ill adapted to the needs of the service. Among the numerous difficulties is the lack of a clear distinction between the responsibility of the H.M.C. itself for maintenance, and the responsibility of the R.H.B.s for planning and assessing the relative merits of "developments" in their regions. In the context of this circular it certainly looks as though the board's responsibility in regard to maintenance is connected with "developments." If this could be clearly established and defined, and, per contra, the responsibility of securing economy in current expenditure could be achieved by some other means, a great improvement might be wrought. The possible alternative of letting H.M.C.s carry the whole responsibility for the allocation of current expenditure, subject only to some central supervision of totalled figures by the Ministry, might well be tried in some selected region. If it were successful it might open the way on the one hand to round-sum allocations for maintenance purposes which the H.M.C.s could use at their own discretion and to their own great satisfaction, and, on the other, to clarifying the functions of the boards. They might then be able to deal faithfully with planning and supervision and with those aspects only of expenditure which are directly connected with "developments."

If confidence in the R.H.B.s shows signs of ebbing a little, this is probably due as much to their inability to give adequate attention to "developments" as to any other factor. They need time and opportunity to take each item at leisure and on the spot, and for their senior officers to prepare considered reports which really do justice to the complicated situations with which they have to deal. If, as one is sometimes given to understand, the "developments" of a particular hospital management committee have to be bunched together, and taken almost en bloc, this kind of thing is not possible. The fact of the matter seems to be that in this sense the regional boards are being asked to do too much. If it is practicable to release them from responsibility for maintenance they may yet make the planning and supervision, which is their primary task, a real success.

IN THE AMERICAN HOSPITAL

THE technical and administrative sides of nursing need an ample supply of well-educated women, and in the United States ways are being sought to attract such women by absolving them from constant personal attention to patients, which many find irksome. Division of labour has, indeed, already been carried a long way, and on his visit to the U.S.A. Mr. S. W. Barnes,[1] house-governor of King's College Hospital, found as many as six categories of nursing personnel sharing the general ward duties performed by nurses and sisters in this country. Supervision and administration lay with the professional nurse, who might have had 3–5 years' training; but this included little "bedside nursing," most of which was carried on by "practical nurses" with a year's training, or by "nursing aides" starting with 3–6 weeks' experience. Supernumerary student professional nurses acted as assistants to the professional nurses; and finally the dietitian and housekeeper were responsible for food services and cleaning respectively. Mr. Barnes does not suggest that British nursing should develop along these lines; on the contrary, he urges that more attention be paid to the comfort and convenience of nurses so that the profession shall continue to attract women who will carry on the best traditions of British nursing. He recommends the complete abolition of the two-shift system, and suggests that the working hours of ward sisters be reduced. He is particularly anxious that accommodation for nurses should be greatly improved, and points out that the provision of private bed-sitting-rooms for junior nurses and separate sitting-rooms for senior nurses is preferable to providing numerous common-rooms and lounges for general use.

Mr. Barnes also makes some pertinent comments on British hospital catering, which compares very unfavourable with the corresponding American services. In the U.S.A., the hospital dietitian is responsible for the purchase, preparation, and supply of all hospital meals and not simply (as in this country) for special diets. American hospital meals are more varied, more tasty,

43. Carlisle, J. M. *Ibid*, ii, 590.
44. Circular R.H.B. (50) 109, H.M.C. (50) 105.

1. Report After Visiting Hospitals in the United States and Canada. Obtainable from the house-governor's office, King's College Hospital, Denmark Hill, London, S.E.5. Pp. 33. 1s.

and more nutritious than those served in British hospitals, and since the American cooks and kitchen staff are in no way superior to their British counterparts, Mr. Barnes regards the greater influence of the dietitian as the deciding factor.

DIAGNOSIS WITH TUBERCULIN

TUBERCULIN tests are not as nearly infallible as is often supposed. In a discussion not long ago at the Mayo Clinic, Stilwell [1] said that the "single-strength" tuberculin test in which 0·0001 mg. of P.P.D. (purified protein derivative) is used on patients sixteen years of age or over should reveal 95% of cases in which significant tuberculosis is present. About a third of adults who react negatively to this strength are positive to the second-strength dose, but "an appreciable number of the reactions . . . may be non-specific in nature."

The degree of accuracy of the test has of course been of great moment to those engaged in eradicating bovine tuberculosis. In discussing this subject Gregory [2] states that in a recent series in Australia about 5% of non-reacting animals were found post mortem to be tuberculous, while 10% of the reactors had no apparent lesions. Many attempts have been made to improve the specificity of the test, and in this country the comparative test is used, in which the reactions produced by the injection of avian and mammalian tuberculosis are compared.[3] In the Stormont test, developed in Northern Ireland, a second injection is made, seven days later, into the site of the original injection. In 300 cattle tested and killed in Australia the total error made up of false-positive plus false-negative reactions was 15·3% with a single intradermal test, 12·3% with a comparative single intradermal test, and only 1·7% with the Stormont test.

The very simple tuberculin test is a most valuable epidemiological tool in investigating tuberculosis, whether in man or animals. But, remembering the complexity of the allergic state, one should not be surprised if it gives the wrong answer in some individuals.

ONE BLIND EYE

UNTREATED squint is the principal cause of monocular blindness in Scottish school-children. This finding [4] is based on the examination of nearly 219,000 school-children, of whom 1713 came within the definition of monocular blindness accepted for the purpose—an incidence of 8 per 1000. There was a steep rise in incidence with advance of age, the figures being 4·4 per 1000 among entrants, 8 among intermediates, and 11·6 among those leaving school. Squint was responsible for just over half the cases, amblyopia for about one-sixth; among the rest, the main factors were congenital defect and trauma. An attempt was made to obtain similar information about the adult population, but the variation between one group and another was so great as to render the figures valueless.

The incidence of monocular blindness which the inquiry revealed is higher than might have been expected, but this is partly explained by the definition of the condition laid down by the committee—corrected vision of 6/24 or less in the affected eye, 6/12 or better in the other. This is not a definition which is generally acceptable, and it seems a pity that the recognised standard of blindness (6/60 or less) was not applied. On the whole, however, the picture presented by the report is encouraging, for it shows that a high proportion of monocular blindness is easily preventable. The increase of incidence with advance of age may be due to environmental stresses, but is possibly another example of the effect of the improved care of the last decade from which the younger children in this survey would have benefited more than the older ones.

1. Stilwell, G. G. *Proc. Mayo Clin.* 1950, **25**, 422.
2. Gregory, T. S. *Australian vet. J.* 1949, **26**, 138.
3. See Francis, J. Bovine Tuberculosis. London, 1947.
4. Report of a Subcommittee of the Scientific Advisory Committee to the Department of Health for Scotland. H.M. Stationery Office. 1950. Pp. 24. 6*d*.

HEREDITY AND ENVIRONMENT

LAST Monday fellows of the Hunterian Society decided by a large majority that "Heredity is more Fateful than is Environment." Opening the debate, Mr. J. H. Doggart suggested that geneticists had been ill served by their friends, who in their enthusiasm had unduly decried the influence of environment. Further damage had been done by the cruel and unscientific use to which the Nazi régime had put racial theories. Nevertheless, heredity was important. Consider, for example, the ancient Greeks, who had something denied to neighbouring peoples. There was no facile recipe for producing genius; and perhaps this was just as well, for geneticists were inclined to say that genius did more harm than good. Mr. Doggart supported his argument by citing an English family which had had more than its share of eminent members; and also the similarity of uniovular twins—though doubtless the proponents of the environmental theory would attribute this to intra-uterine environment. Like Mr. Doggart, Mr. John Eastwood, K.C., was convinced of the supreme importance of heredity. Certainly, however, in his experience as a Bow Street magistrate, environment was sometimes the predominant factor: because of the housing shortage marriages were being disrupted unnecessarily; and young men were sometimes going wrong because they had too much money in their pockets. As to heredity, he had been impressed by the number of cases in which the medical evidence was of a schizoid tendency and borderline mental defect and there was a strong family history of mental disorder. Mr. Eastwood was also convinced that different types of crime were committed by citizens of different nationalities. Speaking for the other side, Dr. J. A. Fraser Roberts declared that, as had been done with domestic animals and cattle, the human species could be changed out of all recognition; but this we did not want to do. The balance of heredity and environment was not always the same; as environmental circumstances improved, heredity became more important; whereas among backward peoples the influence of environment still far outweighed that of heredity. He acknowledged that physical traits and intelligence were primarily attributable to hereditary factors, as also were psychoses; on the other hand, general health, emotion and temperament, and neuroses were conditioned mainly by environment. (There might, added Dr. Roberts, be fundamental differences between twins brought up together.) Prof. J. B. S. Haldane, F.R.S., supporting the heredity thesis, enjoined caution in judging statistics; he knew, he said, of one family where 30% of the people who had married into it had become mentally ill. Nor, he suggested, could heredity be considered in isolation from environment. On a good English meadow a Jersey cow might produce up to 2000 gallons of milk a year, while the Galloway on the Scottish moor was yielding only 200. Put the Galloway into the meadow and its yield might double; but put the Jersey on to the moor and it would lie down and die. He, too, believed that with a regulated and constant environment heredity was the more important. But man's environment was neither regulated nor constant—the expectation of life for the child born in India or China was half that for the child born in England. Furthermore, "you will know more about me if I say I was born in Southern England than if I say my father was a professor and not a brickiayer."

Dr. GÖSTA FORSSELL, formerly professor of radiology at Caroline Institute and director of the X-ray department of Caroline Hospital, died in Stockholm on Nov. 14, at the age of 74.

Special Articles

RESEARCH ON BURNS

An American Symposium

FROM A CORRESPONDENT

AT the opening of this symposium, held in Washington on Nov. 2–4 by the National Research Council, Dr. M. C. WINTERNITZ, chairman of the council's division of medical sciences, remarked that work in this field went beyond surgery, needing a combined approach by physiologists, chemists, and physicists as well as clinicians.

SCOPE OF THE BURN PROBLEM

Dr. EVERETT EVANS, chairman of the council's subcommittee on burns, said that at Hiroshima blast caused 45% of the casualties, thermal effects 40%, and radiation effects 15%. With modern phosphorus and petroleum types of bomb 59% of deaths are due to burns, while 25% are due to blast. He drew attention to the serious nature of combined injuries, especially when blast or thermal injuries are combined with exposure to ionising radiations, even in low dosages.

RADIATION COMPONENT OF ATOMIC BOMB EXPLOSIONS

Dr. WILLIAM T. HAM, jun., said that in above-ground A-bomb explosions, 2000 ft. is the most destructive level. The thermal hazard is not serious in ground and below-water-level explosions. In plutonium fission some 60 types of radiation products are released. Very little radiation escapes at first, because of local absorption; only 3% of total radiation arrives during the first $^1/_{100}$ second. The "mushroom" goes up at 300 ft. per second. It takes 60–100 seconds for the total γ-radiation to reach 4200 ft. from the bomb. γ rays passing through matter are continuously degraded in wave-length; 16 in. of water reduces these rays to $^1/_{10}$ of value, and 20 ft. of concrete at 400 ft. from source will reduce 400 r to 20 r. Fission neutrons are mostly captured in the immediate vicinity of the explosion; only a small percentage is thought to become a radiation hazard. The neutrons released are either "prompt" or "slow." There is no information yet regarding lethal dose of "prompt" neutrons. Absorption of neutrons of both types is probably fatal at 3000 ft. from the bomb. Dr. Ham noted the high incidence of cataract amongst cyclotron workers; 200 rep of "prompt" neutrons produces a cataract. Therefore cataracts occur at 1900 ft. from the bomb; but in Japan cataract has occurred at 3600 ft. At 4200 ft. the M.L.D. of γ-radiation is 900–1000 r, and of neutrons it is 3600 rep.

Commander E. P. CRONKITE stated that certain biological phenomena observed after ionising radiation are inconsistent with the known physics. Thus the exposure of 7 M.eV necessary to produce epilation greatly exceeds the diffuse-radiation exposure known to cause death. Shielding—for example, of the spleen—can increase tolerance to exposure. Considerable protection is afforded by getting behind the concrete in the first 30 seconds after the explosion.

PHYSIOLOGICAL PROBLEMS CONCERNED WITH FLAME-THROWERS

Dr. JAMES M. WALKER said that in the late war deaths after exposure to flame-throwers occurred for the most part within minutes. Patients with severe total-body burns may live some hours; but death may take place very quickly with slight external burns; these deaths are thought to be due primarily to heat, but decrease in oxygen tension and increase in carbon monoxide are also important.

Experimental studies of petrol burns in pigs (sometimes with the body but not the head exposed to heat) have shown that death can take place through three mechanisms: (1) hyperthermia, (2) hyperthermia plus cardiac failure, and (3) cardiac arrest due to the release of concentrated potassium ions from hæmolysed red blood-cells.

In flame-throwers the temperature may go up to 1000°C. There is a difference between the effects of hot dry air and of hot air plus steam, since steam produces pulmonary œdema as well as burns of the upper respiratory tract. There are also differences between the effects of static flame and of high-velocity flame. The deaths in Japanese bunkers attacked by flame-throwers were, therefore, studied with special attention to carbon monoxide poisoning and low oxygen tensions. Experiments with goats in bunkers and in slit-trenches showed that with 34% dead on open ground only 2% were dead in trenches. These dead goats showed only slight external burns, but carbon monoxide poisoning and low oxygen were not sufficient to account for the deaths. A third of the animals showed evidence of laryngeal obstruction; the deaths were therefore ascribed primarily to hyperthermia. In bunkers, after exposure to 800°C, some animals had potassium effects on the heart.

When flame-throwers are used on bunkers with temperatures up to 400°C, oxygen lack and toxic absorption of products such as acetaldehyde are important, as is carbon monoxide increase. If water is on the floor, steam can produce laryngeal and pulmonary œdema. Lethality is increased by combination of all factors—i.e., heat, low oxygen, high carbon monoxide. In goats a 70–80% surface burn at 700°C will produce a "potassium death."

LABORATORY PRODUCTION OF HIGH AND LOW TEMPERATURE BURNS

Dr. HERMAN E. PEARSE pointed out that evaluation of experimental high-temperature burns is by description of gross pathology only. We have not yet a quantitative yardstick to assess biological effect. An attempt has been made to reproduce the thermal component of an A-bomb—that is, a high quick release of energy attenuated by passage through atmosphere. Dr. Pearse referred to the effect of fabrics, both in protection and as a danger in causing secondary burns on ignition. Experimental sources of heat are: (1) electrical discharges; (2) ignition of thermite or magnesium; and (3) constant source of heat from a carbon arc, or the sun (by mirrors). No method is ideal. There is need of further research for precise knowledge of depth of tissue penetration, and of energy emitted.

Dr. W. J. H. BUTTERFIELD described work in Britain since 1947 on the thermal effects of A-bombs, and means of protection and treatment. This research had been directly concerned with spectral range, clinical course, and healing-times. The experimental material had been the bodies of the workers themselves and of volunteers among co-workers. The threshold of response was related to area exposed; the larger the area, the lower the threshold. The red part of the spectrum was believed to be more important than ultraviolet light as a source of A-bomb burns. Infra-red rays, produced by a coal-gas machine, had been applied to areas of skin of 5, 3, and 1 sq. cm., with the source of heat at a distance of 11 cm., for 1·1 seconds. This exposure was thought to equal the thermal component of an A-bomb at 4500 yards from the hypocentre. The clinical course of the burn was plotted. There was erythema, dull pain, œdema, and blisters which went on forming for up to 24 hours. Desquamation occurred at 7–10 days; healing was complete at 14 days; there was some late pigmentation. On exposure of 1·3 seconds to 4 calories, burns with full-thickness skin-loss were caused. Such full-thickness skin burns might be expected at 3100 yards from an A-bomb; at 4800 yards

only erythema would be expected. The wider the area exposed, the lower the threshold. A-bomb heat rays were rectilineal; most exposures would be glancing, and therefore less severe for the given distance. Dr. Butterfield also described the results of white-light burns, whose clinical course differed. In the absence of infection, healing and distance from the A-bomb bore a linear relation to each other. If there were 1000 people per sq. mile in a city exposed to an A-bomb, 1600 could be expected to be exposed within a radius of 3000 yards; this would result in incapacity amounting to 150,000 man-days, provided the burns healed without infection.

Dr. Butterfield emphasised that his experiments were not concerned with the constitutional effects of the burns, but solely with the local lesion, and in particular with obtaining precise information about extent and clinical course of lesions produced by measured exposures in known lengths of time which were related as closely as possible to the presumed exposures to the thermal component of A-bombs.

Dr. JAMES W. BROOKS described the results of standard burns produced by relatively low temperatures at long durations. Area and depth were constant; healing was spontaneous and was not associated with serious infection. The lesions were produced on the trunk not near orifices; dogs were used as their response to burns is similar to that in man. Deep second-degree burns were produced. By means of a formula the exposure to produce a 20% body-surface burn could be measured accurately. Healing was by marginal ingrowth after separation of sloughs, which was accelerated by the dog licking the lesions; it was complete, on average, by the 42nd day. The effects included: falls in hæmoglobin percentage and in protein in the first hour; and 25% decrease in cell-mass due to enlargement of spleen under sodium pentobarbitone. After 20 days there was a gradual rise in hæmoglobin, red blood-cells, and blood-protein during the healing phase.

The experiments were then repeated, the dogs now being given, in addition, 100 r total body radiation from 1 M.eV source at 30 r per minute. In a third experiment only the radiation of 100 r was given. Studies of hæmoglobin, red and white blood-cells, and plasma-protein showed little difference between the different series in the first 24 hours. But the anæmia was more rapid and more severe in the group both burnt and irradiated; the white cells remained steady for 6 days and then dropped rapidly by the 12th day; in this group blood-cultures became positive, mostly with streptococci, by the 12th day. Necropsy showed little change in intestines; the bone-marrow showed a great drop in all cellular elements (in the fatal burns without irradiation the bone-marrow showed a myeloid preponderance).

Other experiments with different dosages were described. Exposure to 25 r plus a 20% thermal burn caused leucopenia starting on the 10th day, as opposed to the 6th day when the exposure was 100 r. The mortality for each group was as follows: 20% burn, 13%; 20% burn plus 100 r, 75%; 20% burn plus 25 r, 33%; 100 r alone, 0%.

FLUID AND ELECTROLYTE REQUIREMENTS

Dr. DONALD D. VAN SLYKE emphasised that shock is due to loss of blood, plasma, and electrolytes; and it is best combated by replacement of these. The chief problem is to find a replacement fluid for plasma and blood, for which the demand would be too great.

Electrolytes and Water.—Dr. OLIVER COPE pictured the burn wound as a parasite on the surface of the body. Of all local measures, only two are certain to limit needs of fluid by reducing local loss: these are pressure and cold. Recently there has been evidence that A.C.T.H. might also do this. The object is to replace in the rest of the body the fluid lost in the wound. Thermal wounds swell rapidly owing to capillary permeability and arteriolar dilatation, with increase in rate of blood-flow through the affected part. Volume loss is proportionate to area and mass of burn; it is limited by the rising intercellular pressure in the burnt areas. The protein content of the burn bleb is at first 3–4·5 g. per 100 ml., and with healing falls to 2 g. per 100 ml. at 7 days. There is a great increase in lymph drainage and in the protein content of lymph from the part. Local œdema reaches a peak at 36–42 hours. At 48 hours the capillary membranes become less permeable; the lymph-drainage rate is high, therefore œdema starts to subside rapidly at this time; circulation and kidneys must rid the body of this excess fluid. Unburnt areas of the body are dehydrated, so that all lymph-flow from them ceases. If the burn is not fatal, fluid redistribution takes place.

Plasma provides water and electrolytes, but too much protein; it is therefore a good, but not an ideal, infusion agent for burns. The object should be to give colloids and electrolytes in the volume necessary to replace that lost in the burn; locally pressure-dressings are applied to restrict local volume loss, for unsupported burnt areas develop "puddles." Pressure is a useful adjunct. Cold can also limit local loss by reducing capillary flow.

This plan of therapy based on expected volume of space enlargement is still experimental. Fluid should have both colloids and electrolytes plus water for renal function. "The percentage body-surface-affected formula is best for planned therapy," provided it is adjusted up and down in accordance with the needs of the particular case. The need for fluid is greatest in the first 1–8 hours after burns. The rate of renal output is the best guide to the rate of fluid administration. Dr. Cope especially stressed that fluids must be sharply curtailed 36–48 hours after the burn.

Dr. O. J. PURNELL declared that lives may be lost by pulmonary œdema or by anuria. In children and the very old it is particularly difficult to assess fluid requirements; if too much is given, fatal pulmonary œdema ensues on the 3rd–6th day. 15 ml. of blood plus 15 g. electrolyte for each 1% surface-area burnt is the formula that has been used; but this may be too much. Dr. Purnell now gives 2·6 ml. per kg. body-weight per 1% of surface-area burnt on the first day, and 1·6 ml. on the second day. He believes that the customary formula of 50–100 ml. per 1% body-surface burnt may be too little and lead to anuria. He therefore suggests 1 ml. plasma per 1% per kg.; plus normal electrolyte solution of 1 ml. per 1% per kg.; plus water up to 2000 ml. in 5% glucose. Not more than 3000 ml. of electrolyte or plasma is given per day; there should be an excretion of 50 ml. of urine per hour. He never gives more than 10,000 ml. of all fluids in the first day. Sometimes death takes place even with a good urinary output.

Giving colloids, fluid, salt of 1 ml. per each 1% surface-area burnt per kg. body-weight, plus 2000 ml. of water by mouth, followed by half this amount on the second day, Dr. Purnell has had no cases of pulmonary œdema or of anuria. This means an upper limit of 3000 ml. each of colloid fluid and of salt fluid. If more is given, pulmonary œdema is caused.

Albumin, Plasma, and Whole Blood.—Prof. DICKINSON W. RICHARDS, jun., described a study of the circulation of 200 cases in the acute stages of burn and traumatic shock. Blood-volume, right auricular pressure, cardiac output, femoral-artery pressure, and peripheral resistance were measured in each case. With burns there was a fall in the cardiac output, less fall in the right auricular pressure, and a rise in the peripheral resistance to above normal. This picture did not explain the deterioration in these patients. The disorganisation of circulatory dynamics was not propor-

tionate to the local conditions. These measurements were made following the administration of blood and saline. Administration of blood increased the cardiac output, the oxygen pressure, and the pressure in the right auricle. Concentrated albumin fluid had the same effect, but to a smaller extent. Saline had an even less marked and a more transient effect.

Dr. CARL A. MOYER had tried to produce the thermal injury experimentally so that it could be studied like a pharmacological problem—that is, what thermal injury would have an M.L.D. of 100% in 8 hours? He found that all dogs scalded to 60% surface with water at 85°C for 10 seconds died in 5–6 hours. He did a series of controls and then a further series after "loading" the dogs about to be burnt with various types of fluid. Dogs loaded with saline, bicarbonate, and blood mixture showed a great rise in the proportion surviving for 60 hours. Animals given blood and allowed to drink salt water survived 80 hours. Dr. Moyer underlined the importance of loss of red blood-cells into the dilated capillaries of the burnt area, and of the slow blood-flow there. He regarded the urinary output as an important guide to rate and amount of fluid administration, but added that patients do not respond uniformly.

Dr. Moyer gave the results in a series of burns treated in Dallas, Texas, all with involvement of 30% or more of the body-surface. In 1944–46 cases were treated chiefly by plasma, 3–12 litres in 12–36 hours, plus water by mouth. The 1947–49 group were treated by blood plus salt water by mouth. In both groups age had a very adverse effect; no patient over 60 survived with more than 30% body-surface burnt. Four patients had been seen comatose with very tight trunk dressings; they had recovered consciousness when these were released. Dr. Moyer referred to the difficulty in taking fluids by mouth with burns of more than 30% of the body-surface; the stomach emptied very slowly when shock was present.

Dr. ARNOLD M. SALZBERG had estimated plasma-volume by the T1824 dye technique. The red-cell volumes were estimated by the plasma-volume/venous-hæmatocrit formula. The red-cell volume was also estimated by means of radioactive phosphorus (P^{32}). In dogs, standard burns were inflicted by exposure to 60°C for 1 minute to 20% body-surface. The red-cell count by the P^{32} technique differed from that by the plasma-volume/venous-hæmatocrit technique formula. The reasons for the discrepancy lay in the error in the venous-hæmatocrit reading, which was influenced by variations in individual red-cell volume. It was therefore thought that the dye technique did not yield accurate data for replacement therapy. After the primary phase the replacement therapy demanded the giving of blood, if the P^{32} readings were correct.

Large amounts of whole blood in the first 24 hours helped healing and prevented late anæmia; the initial loss of red blood-cells accounted for much of the late anæmia.

Globin.—Dr. MAX M. STRUMIA held that, when oral feeding is impossible, globin is a valuable substitute for protein feeding; it is indeed a good replacement material when plasma-proteins are lost from any cause. Globin is readily metabolised; a 4% solution is isotonic with 7% plasma-protein. Globin is a salvage material obtained from discarded red blood-cells; 40 g. is obtained from 500 ml. of blood.

Dr. ROBERT B. PENNELL said that with Dr. Strumia's method of manufacture from unwashed red-cell residues (of any blood group), the globin product is stable for years when dry or in solution; it is free from antigen; it can be used in strengths of up to 16% without toxic reaction. It contains no potassium but some iron and some calcium. A study of the use of modified globin in burns has shown that it is a valuable substitute for plasma in the treatment of shock. At the moment it affords the only possible means of salvaging outdated red cells.

Dextran.—Dr. GUNNAR THORSEN (Stockholm) described six years' clinical and experimental experience with dextran. Urinary excretion is proportionate to the molecular weight of the dextran used and the total volume given. When $^1/_2$–1 litre is given, nearly all is excreted in 2–4 days; but some remains in organs such as the liver. 1 g. of dextran binds 23 ml. of water. Dextran does not cause anæmia; the bone-marrow of patients receiving it shows no abnormal cells. The critical molecular weight is slightly above that which is filterable through the kidney; the molecules should be large enough to stay in the blood without causing sludging. The only complication of importance has been some collapse and substernal pain in 0·02% of cases. In burns dextran is as good as plasma; in the early phase 1 litre of 1% dextran is given alternately with 400 ml. of blood. There have been no cases of "wet" lungs. Dr. Thorsen especially emphasised the value of dextran as emergency treatment in the field or in outlying hospitals.

Dr. J. P. BULL (Birmingham) gave an account of experience with dextran in the Medical Research Council's burns unit. The large-molecule polysaccharide used commercially has to be broken down by hydrolysis. Dextran molecules are made up of glucose with 1–6 linkages; these break down slowly and are in the circulation longer than one would expect. Dextran is given in the first 24 hours after the burn; blood is given later. The amount given is determined by hæmatocrit readings. Dextran can be swapped bottle-for-bottle with plasma. In an adult, about 1 litre of plasma is given for every 10% of body-area burnt, plus sodium lactate by mouth. If a lot of dextran is given, plasma-proteins fall (in one patient, who died, to 3 g. per 100 ml.). In neither patients nor animals has there been evidence of toxicity or of pyrogenic or antigenic activity. In the body dextran has a half-life of 40 hours. About 30% can be recovered from the urine. The fate of the rest is uncertain but after some months the organs contain no substantial amounts; it disappears last from the lymph-glands. Dr. Bull remarked on the difficulty that dextran may cause in cross-matching of blood because of its tendency to provoke rouleaux formation; patients who may need blood have samples taken for cross-matching before any dextran is given.

Gelatin.—Dr. J. L. ONCLEY discussed the preparation of degraded gelatins suitable for use as plasma substitutes. Ossein gelatin is degraded into a series of shorter chains; the shorter the chain the lower the molecular weight. D gelatin is that most often used clinically; it is characterised by viscosity and by its osmotic effect. Degrading may be done by different methods.

Prof. I. S. RAVDIN described clinical experience with gelatin over the last nine years in Burma, India, and America. He has used the P20 gelatin in 4% solution. He declared that if blood is available there is no need to worry about substitutes for it. In burns the need is for a substitute product exerting a colloidal osmotic pressure over hours rather than days; the gelatin solutions are suitable for this. Some degraded gelatins cause serious renal damage, but P20 does not. Other drawbacks include lack of homogeneity, and the variety of molecular weights. An extensive trial of P20 gelatin has shown it to be very satisfactory when used in a 6% solution, plus other fluids; 50% of the gelatin is lost in the urine in 4–5 days. The use of low-molecular sizes reduces to a minimum the risk of intravascular clot. Professor Ravdin believes that, when given in hospitals, it is as safe as blood.

Dr. EVERETT EVANS has found P20 better clinically than the more degraded gelatins. He has administered

to a child 200–400 ml. of 4% solution four times in 24 hours. In his opinion, P20 gelatin is clinically an effective plasma substitute for cases of burns.

RENAL AND PULMONARY DISTURBANCES ACCOMPANYING SEVERE BURNS

Renal Disturbance.—Dr. CHARLES H. BURNETT said that serious renal insufficiency is rare after prompt full treatment of civilian burns, but after military and A-bomb burns it is common. Mallory has demonstrated a lower-nephron nephrosis after severe trauma, crush injuries, transfusions, and excess sulphonamides. There is a shock-like state with excretion of myohæmoglobin and hæmoglobin. On days 1–6 casts are present without glomerular change; at 7–10 days tubular casts appear.

The management is that of acute renal insufficiency of lower-nephron type. This management comprises: (1) re-establishment of homeostasis, (2) maintenance of homeostasis during period of oliguria, and (3) maintenance of homeostasis during period of diuresis. In burns a special problem is the excess of fluid which has to be got rid of between the 2nd and the 4th days. The serum-sodium is a good guide to therapy; it may be urgent in the period of change from oliguria to diuresis. Deficiency of serum-sodium may lead to sudden collapse. Acidosis in this phase of oliguria should be remedied by treating the cause; but it is unwise to be too energetic about the correction of the serum carbon dioxide. Severe alkalosis may be caused, and be more dangerous and difficult to correct than acidosis. During the oliguria only 750–1000 ml. of fluid is given. The nutrition is maintained by 10–25% glucose. At this period an excess of serum-potassium may be present, owing to breakdown of red blood-cells. If the circulation is stabilised protein should not be given during the oliguria; this would increase the serum-potassium. Dialysis is not generally necessary, but may be valuable in burns with lower-nephron failure. Once diuresis sets in, extensive depletion of sodium, potassium, calcium, and chloride may occur in the absence of replacement. Renal insufficiency is preventable; but with mass casualties acute kidney failure is to be expected. The treatment is that of the lower-nephron syndrome complicated by the nature of the fluid-loss in a burn.

Experimental Pulmonary Injury.—Dr. ALAN R. MORITZ said that respiratory-tract damage is common in burns and is not proportionate to the extent of the skin lesion. Not only heat but also combustion products of any fire can cause pulmonary injury. Hot air was delivered into the upper respiratory passages of dogs at temperatures of 350–500°C, from different heat sources, with and without protection of the larynx. The dogs were allowed to breath 120 times. Early deaths were due to laryngeal œdema, with little changes in the lower trachea or lungs. Air even at 500°C is not hot enough to maintain its temperature into the lungs. In another series a steam jet was introduced into the lungs. When hot air was passed into the larynx a fall in temperature of 350°C to 180°C was observed without pulmonary injury. With a flame at 1000°C at the larynx there was severe damage in the upper trachea, some early pulmonary damage, and late bronchopneumonia. When steam at 100°C was passed into the larynx 50% of the dogs had moderately severe thermal injuries of the alveoli around the medium-to-large bronchi. Why is it that air hot enough to damage skin does not damage the lungs? It is because the heat capacity of air is $^1/_{4000}$ that of water. Only when the temperature of air is high enough to burn skin instantly is the lung tissue affected, and then the lung damage is not incompatible with life. Only when the larynx is protected does fatal thermal pneumonitis develop. If the larynx is not protected death occurs from early laryngeal obstruction. The most vulnerable part of the lungs is the central alveoli, which can show hæmorrhagic œdema when the neighbouring bronchi are unaffected.

Respiratory-tract Injury in Man.—Dr. MAXWELL FINLAND recounted experience at the Boston City Hospital of the Boston Coconut Grove disaster nine years ago. In this disaster people were confined in a rapid conflagration; there was a big proportion of early deaths. At necropsy of the victims the mucosæ of the upper respiratory passages were red, œdematous, and hæmorrhagic; these signs diminished towards the bronchi. There was no froth, but a dripping pulmonary œdema limited to the alveoli, possibly due to an irritant and not to the flames.

Cases were classified, according to severity of respiratory symptoms, in five groups, ranging from those with a slight cough to those with consolidation plus respiratory obstruction; there was close correlation between clinical signs and X-ray evidence of atelectasis and emphysema. There was also correlation between the extent of surface burns and the pulmonary findings. The deaths were in two groups: (1) cases with burns of over 30% body-surface, and (2) cases with signs of pulmonary consolidation or of consolidation plus obstruction. The obstruction sometimes came on very suddenly; these cases needed most careful watching. Administration of fluid was difficult because of the danger of pulmonary œdema. Tracheotomy was done in 18 cases; only 3 survived. Respiratory obstruction was a major factor in the 39 fatal cases.

The nature of the noxious gases was not ascertainable from the patients' history, but in some cases carbon monoxide poisoning was a factor. A late follow-up has shown no important or persistent damage to lungs in survivors. The pulmonary damage in the fatal cases was due to multiple causes, primary and secondary. The best management of the chest condition would appear to be comparable to that of children with severe laryngo-tracheo-bronchitis. In the cases seen at Massachusetts General Hospital the pulmonary œdema occurred in waves at 5–24 hours.

STRESS, INJURY, AND ENDOCRINE RESPONSE

Prof. GEORGE W. THORN divided the humoral factors in severely burnt patients into three systems:

System A is in the burnt area. It concerns the liberation of substances and their action on the kidney and the liver. We should note that the rate of absorption of toxins is increased by fluid administration, and we should ask if this is always a good thing. System A also stimulates system B.

System B is the pituitary action brought into play in response to the toxin from the burnt area, and in its turn stimulating the adrenal cortex, leading to an outpouring of adrenal steroids. Is this always entirely a good thing for the burnt patient? And is the output of steroids adequate or optimal? In a state of stress adrenal-replacement dosage, if desirable, would have to be very high. There is excess 17-ketosteroid and 11-ketosteroid excretion; but what this really indicates is unknown. System B is linked with system C.

System C is the renal-hepatic system. This maintains the blood-pressure by excretion of pressor substances from the kidney and/or depressors from the liver. A fall in blood-pressure may be due to excess depressors or diminished pressors.

In burns there is intense inflammation. A.C.T.H. will minimise this; hyaluronidase may be blocked by 'Cortisone' or by A.C.T.H. Synthesis of histamine is also reduced. Most of the usual body reaction to injury is therefore blocked by giving A.C.T.H.

A.C.T.H. and cortisone can reduce the fever; but it is uncertain whether this is entirely beneficial. These hormones also modify the liver reactions, helping to mobilise fat and save proteins; their effect on blood-formation is to cause leucocytosis; they may also prevent

the formation of a pyogenic membrane. This probably means that they should only be used in association with antibiotics. A.C.T.H. influences the production of hypertensinogen by the kidney; in 7–10 days it causes an increase in peripheral resistance by its effect on capillaries and arterioles.

Patients who have their blood dialysed for 6 hours show a rise in blood-pressure even when not previously responsive to pressor substances; depressor substances have therefore been removed by the dialysis. Dialysis may be used instead of blood in cases of pulmonary congestion. After 6 hours' dialysis the patient may again respond to pressor substances. Dialysis is a method with great potentialities. In shock it may possibly be necessary, not merely to *give*, but also to *withdraw*, substances—e.g., the depressors secreted by the liver.

Relation to Burns.—Dr. J. S. L. BROWNE (Montreal) said that the adaptation syndrome is the common response to a variety of stimuli. The response varies with time; it is also modified by previous stimuli. The urinary hormone content is only a rough indication of the hormonal activity and internal balance. What is an adequate output of hormones? It varies widely with the state of the organism. Both urinary nitrogen and corticoids rise after injury or burns. Testosterone checks nitrogen loss, but it may simply be transferring protein from the site of injury to other parts. Continuous A.C.T.H. will cause a rat to lose weight and die in 9 days with all organs showing a lowered nitrogen content; and patients in trauma are already in negative nitrogen balance. It should be noted, too, that different tissues have different capacities to seize nitrogen.

When a patient with burns receives 1000 mg. of ascorbic acid, none appears in the urine for some days and the blood level remains low. The effect of A.C.T.H. is to cause vitamin C to appear in the urine when administered in heavy doses. This phenomenon has great potential value. Homografts persist for at least 140 days when A.C.T.H. is administered.

Metabolic Response to Thermal Injury.—Prof. FRANCIS D. MOORE suggested that a thermal burn is a disease with a natural history and a characteristic succession of events. With plasma therapy the patient is put in positive nitrogen balance; then high nitrogen excretion follows, with a negative nitrogen balance, before return to a positive nitrogen balance with healing. There is a short period of potassium loss; and often a period of notably positive sodium balance. This may be due to corticoid production and secretion. Other factors are immobilisation and starvation; starvation is the more important. Professor Moore's estimate is that $^1/_5$ of the response is due to immobilisation, $^2/_5$ to starvation, and $^2/_5$ to endocrine reaction. In a burn the negative nitrogen balance can be checked by late "loading" with protein, and the negative potassium balance by early loading. The early endocrine picture is that of extreme adrenal stimulation going on to exhaustion; this points to the need of A.C.T.H. In some cases 300 mg. cortisone is given for the first 3 days, then 120 mg. A.C.T.H. daily. 2 mg. of cortisone does not interfere with the healing of a herniotomy wound; relatively enormous doses of A.C.T.H. are needed to interfere with the healing of experimental wounds. The caloric deficit is treated by fine-fat emulsions (of coconut oil) given intravenously.

TREATMENT OF THE BURNT AREA

Closed-dressing Principle.—Dr. HARVEY S. ALLEN reported on 955 cases admitted to hospital since 1938, with a mortality of 1·78%. The routine is to cleanse the burn with saline and to treat the shock by fluids. Locally a pressure-dressing is applied for 6–10 days. Sloughs are then excised and grafts applied forthwith, or 4 days later if oozing is heavy. In 45% of children the wounds were closed in two weeks, and in 86% in three weeks. Pressure-dressings are regarded as important; they must be of large resilient material with a close-mesh underlayer, and must act as splints. Antibiotics are used only for established infections. Of this series, 30% showed clinical shock on admission, 25% needed grafts, and 17% needed excision of dead tissue. In 44% grafts were applied within 2 weeks, and in 85% within 3 weeks. Dr. Allen emphasised the importance of this early grafting: "The impetus to heal is quickly lost. . . . I do not believe that we can apply drugs to a wound and expect healing."

Dr. BULL said that the pressure exerted by properly applied pressure-dressings ranged from 30 to 50 mm. Hg.

Mr. PATRICK CLARKSON (London) drew attention to the dangers of pressure-dressings applied to the neck, especially in burnt children. He has had some experience of the exposure method, and has found its practicability in the treatment of superficial burns in general hospitals a great asset. He complimented Dr. Allen on his success in reducing mortality in such a large group, including many of the most severe types, to 1·7%. This, he is sure, is the result, not only of Dr. Allen's exceptional skill in the operative handling of these difficult cases, but also of his energetic plan of management, by which he excises the sloughs and provides a free graft cover for over 80% of his cases within the first 10–20 days. This is a most exacting programme, but its successful accomplishment obviates many problems.

Exposure Method.—Lieut.-Colonel EDWIN J. PULASKI referred to the reintroduction of the exposure method of local treatment by Wallace in 1948. The object of this method is to obtain and maintain a dry surface after cleansing with a detergent. The affected part is elevated and immobilised. The area of full-thickness skin loss is excised after 20 days and grafted. Results obtained by the U.S. Army in Texas confirm for adults in a semi-tropical climate Wallace's findings in Edinburgh. The advantages of exposing the burn area are as follows: there are no pressure-dressings, which are difficult, dangerous, and time-consuming to apply; the marginal skin is rarely macerated or lost by secondary infection; there is no odour; there is a short period of pyrexia; nursing care is reduced; healing-times are short; and grafting is less often needed. Exposure is a hospital procedure, and not for outpatients; it is probably unsuitable for circumferential burns, because parts of these are in contact with the sheets. The method is particularly suitable for "burns of the face and neck and of the perineum, and for unilateral burns."

Mr. A. B. WALLACE (Edinburgh) reviewed experience of over 300 cases treated by this method during the past three years. His treatment of burns is by "controlled fluid therapy and local care." Clinical signs—thirst, pallor, restlessness—precede blood-changes and are indications for intravenous fluid. Tables of normal hæmoglobin percentages, hæmatocrit readings, and urinary output for different ages are kept and are constantly referred to when assessing fluid needs. Fluid replacement is based on age and the estimated percentage body-surface burnt, in accordance with a chart which has been constructed in his department. (The water, protein, and electrolytes in this chart for fluid replacement are very similar to the figures arrived at independently and from different evidence by Professor Evans in the U.S.A.)

Cultures of the exposed burnt area have never shown growth of hæmolytic streptococci, proteus, or *Pseudomonas pyocyanea*, though these organisms were often demonstrable in the air of the ward. Mr. Wallace compared 100 cases treated in his children's ward by exposure of the burns, with 100 cases treated earlier by pressure-dressings. Of the exposed cases 9 needed

grafting; of those with pressure-dressings 27 needed grafting. None of the exposed patients had fever for 1–6 weeks; 34 of the patients treated with dressings had such a fever, and 5 of this group had streptococcal rashes, which were entirely absent from the exposed group.

Mr. Wallace said that the exposure method is used by him as a means to an end—this end is to obtain a dry skin with maximal preservation of the skin's natural property of resistance to infection. He believes that a dry skin could probably also be obtained by an absorptive dressing. In his view the term "pressure-dressing" is wrong; it should be replaced by the term "absorptive dressing." The two methods—exposure and absorptive dressings—are complementary rather than mutually exclusive. There are indications for the use of each.

INFECTION IN SEVERE BURNS

Mode of Infection and its Control.—Dr. LEONARD COLEBROOK, F.R.S., reviewed his very extensive experience while in charge of the M.R.C. burns units in Glasgow and Birmingham. The Glasgow burns were treated largely without antibiotics.

"The bacterial factor is the biggest in severely burnt patients." 90% of severe burns are complicated by infection, which postpones grafting and healing and causes unnecessary disability and unnecessary deaths. The tradition that in severe burns infection is inevitable is wrong; infection can be avoided. Today many cases of 60–70% body-surface burns recover. Dr. Colebrook reserved his judgment of the exposure method of treatment.

In Birmingham the policy was to regard all burns as liable to infection and needing treatment under a microbe-proof barrier. This meant doing all dressings in a room with sterile air, and the use of topical penicillin. Dr. Colebrook showed slides demonstrating relatively simple air-conditioning apparatus, whereby an effective rate of air replacement from above down at 20–30 replacements per hour ensures a virtually sterile environment within the dressing-room. The value of this sterile air has been difficult to assess, because a strict dressing technique and topical penicillin were used concomitantly. But the over-all effect of these three factors was most striking. Thus, in Glasgow, without the dressing-room, the infection-rate with hæmolytic streptococci was 30%; at Birmingham it was less than 5%. At Birmingham, too, many burns were kept completely sterile for 2–3 weeks. The average stay in hospital has been reduced by 50%. Clinically pain has been largely eliminated, and throughout treatment the morale of patients is good.

Dr. Colebrook made a special plea for the establishment of burns centres in all large cities. About 100 beds per 1,000,000 population are necessary in England; in the U.S.A. burns are about twice as common, and 200 beds per 1,000,000 are probably necessary. He also drew attention to the possible conversion, for war purposes, of ambulances into mobile dressing-rooms with sterile air produced by air-conditioning at a high rate of air replacement. Another urgent need is the determination of a simple dressing (to be left on for a week) for hand and face flash-burns.

Dr. Colebrook declared that, in the event of mass casualties, streptococcal infection might again be seen in its old, dangerous, and epidemic form. Our present relative freedom is due to penicillin, to small numbers, and to conditions of treatment which could not be expected to prevail with mass casualties.

Antibiotic Therapy.—Dr. WILLIAM A. ALTEMEIER said that the majority of U.S. doctors prefer systemic to topical penicillin. Each antibiotic has a limited antibacterial spectrum. Penicillin has the widest range, chloramphenicol the next widest, and then 'Aureomycin' and 'Terramycin.' Terramycin is effective against the highest percentage of cocci and gram-negative bacilli; this is to be expected since it has been used only for a short time. Antibiotics are only a temporary measure in the control of infection in deep burns; these need surgical removal of the sloughs and a graft cover.

NUTRITIONAL CARE

Burn Anæmia.—Prof. G. WATSON JAMES outlined the biochemistry of the formation of hæmoglobin from a globin and from an iron-containing hæm fragment. On breakdown the iron is retained by the body, the pigment excreted. The progenitor of the red cell is the site of the synthesis of hæm and globin into hæmoglobin. The resources for this are brought to the cell by the plasma. If the plasma-protein (including glycine) is low there is normoblastic arrest. Any disturbance of porphyrin metabolism probably indicates severe disorder of red-cell metabolism. He drew attention to the large amount of red-cell mass that disappears after the dressing of extensive burns. In burn anæmia the hæmoglobin tends to settle at about 8–10 g. per 100 ml. He concluded that the anæmia requires, for its radical treatment, the removal of dead tissue and healing by grafts.

Nutritional Care.—Dr. STANLEY M. LEVENSON spoke of the adverse effect on nutrition of combined radiation and thermal damage. Routes of feeding are by mouth, stomach, jejunum, or vein. Optimal amounts have not yet been determined, but high intake in the first week is always beneficial. The most useful diets are liquid, given as regular small feeds, with a calorie content of 3500–5000 and protein totalling 100–250 g. (When milk is the major protein source, there may be danger of calculi.) A thin plastic nasal tube may be left for up to 5 months, with weekly removal for cleaning; this permits administration of protein in the form of unpalatable liver feeds. 20% of calories should be from fat.

Dr. FREDERICK J. STARE declared: "I do not know what an adequate calorific intake for a severe burn is." A fine emulsion of coconut oil, in addition to providing calories, confers efficiency of utilisation on other elements in the diet. The average particle is $^1/_2$ μ; none is larger than 3 μ. With oral administration all the fat is absorbed; none is recovered in the fæces. The emulsion is palatable and can be used as a solvent for vitamin K. (When so combined and given intravenously, it can correct the effects of dicoumarol in 12–24 hours.) The emulsion is out of the blood-stream in $3^1/_2$ hours. When tagged with radioactive C^{14} the carbon can be detected in expired air within 2 minutes of being injected. 1 litre, carrying 3200 calories, can be given in half an hour; up to 5–6 g. of fat per kg. body-weight per day is given. A glassful of the fat emulsion taken orally gives 1500 calories.

EARLY DEBRIDEMENT OF BURN WOUNDS

Pyruvic Acid.—Dr. SAMUEL C. HARVEY stated that pyruvic acid acts on the slough not digestively but rather as a physiological accelerator of the normal process of autolysis and separation.

Streptokinase and Streptodornase.—Dr. WILLIAM S. TILLETT said that the effects of these enzymes are proportional to the amount of substrate against which they are active. Streptokinase is active against fibrin and globin; streptodornase against nucleotides, which form most of the solid component of pus. Both need serum for activity; this is absent in dry sloughs. Both cause proteolysis and liquefaction. They are not effective against collagen. The extensive slough of a burnt leg was "cross-hatched" by incision, and the enzymes

were applied for some hours daily. 20,000 units of streptokinase and 7000 units of streptodornase were applied each day; and the slough separated in 10–14 days. The raw area was then ready for grafting; the graft was a 75% "take," compared to a 50% take on the raw area on the control side. There have been no local or general toxic effects. Collagen and fibroblasts are not in the spectrum of these enzymes.

Collagenase.—Dr. ALTEMEIER has studied collagenases from three sources: clostridia, gram-negative bacilli, and vegetable compounds. For slough removal the chief need is a collagenase, since 70% of skin sloughs is collagen. The collagenase from clostridia (*Cl. histolyticum*) and that from gram-negative bacilli accelerates the separation of sloughs, but less so than the collagenase from the vegetable compound. Application of this substance to experimental sloughs caused the sloughs to separate so rapidly that in 20 hours they could be wiped off; but there were severe reactions in the surrounding viable tissues. The problem now is to find the proper dosage of this extract, and the means of protecting normal tissues when it is used.

PLASTIC REPAIR OF SEVERE BURNS

Dr. J. BARRETT BROWN said that local technique is not as important as being kind, gentle, and clean in the treatment. He showed a number of slides demonstrating the excellent results that follow early grafting with good technique. Slides were also shown to illustrate the value of homografts as a temporary cover while the metabolic imbalance is corrected. Dr. Barrett Brown mentioned the risk of infection of dermatome donor sites, especially when the patient is in a state of metabolic imbalance. He believes that saline baths have a valuable place in treatment of the healing phase of extensive deep burns.

Dr. SUMNER L. KOCH showed slides illustrating the many and difficult problems in deep burns of the hand. Sloughs were generally removed in the second week under a tourniquet; a free graft cover was then given even when tendon and bone were exposed. In such deep burns the thin primary cover was later replaced by flaps of skin and fat under which the tendon, nerve, and bone grafts might be done.

DISASTER PROBLEMS OF BURN CARE

Dr. TRUMAN G. BLOCKER, jun., pointed out that in mass disasters it is impossible to provide treatment by accepted standards; but preparation and planning are needed. He drew attention to the multiplicity of lesions in most disaster casualties, to the multiplicity of sources of trauma, and to the serious adverse effects of ionising radiation on the course of burns and soft-tissue injuries. He believes that there is need for criteria by which the greatest proportion of patients can be saved. As to local treatment, the average doctor still cannot apply pressure-dressings safely and properly; he has seen many examples of peroneal and ulnar nerve palsy following application of such dressings to burnt limbs. He believes that the best local treatment is by exposure. With this treatment fewer patients need grafts; there are fewer complications, and there is earlier ambulation and better morale throughout. He would recommend its use for A-bomb burns caused by flash, affecting face or perineum, or one side (not the whole circumference) of a limb. The need for training more surgeons in methods of management is urgent. Finally he recommended five things in plans for these disasters: (1) concentration of treatment on patients with a chance of useful survival; (2) standardisation of methods at a lower level than the peace-time ideal; (3) the making of stock-piles of essential medical equipment; (4) the issue of plans of treatment of early phases of burns to all physicians; and (5) establishment of burns centres.

Triage and Evacuation.—Colonel PAUL HAYES said that estimates of A-bomb casualties vary from 10,000 to 50,000 per bomb (10,000 if warning is good). Casualties are expected to be distributed as follows: blast 65%, heat 20%, radiation 15%. In an air-burst all may be presumed dead within a radius of half a mile. The zone 1–2 miles beyond this will provide most of the severe injuries; and the zone beyond this again, the greatest number of minor injuries, especially flash-burns. Ideal treatment will be impossible; but it is worth remembering the army maxim—"P.P.P." (prior planning pays). These medical plans "are not to be at sacrifice to the combatant services' ability to accomplish their mission."

Civil Defence Planning.—Dr. NORVIN C. KIEFER said that casualties could be expected to be reduced by at least 50% if a few minutes' warning were given, and if there were a plan of protection of which the population was informed. Outside aid would be needed in targets within a few hours of their being hit. This aid would be of two types: (1) mutual aid from the immediate vicinity, the personnel acting according to a pre-arranged plan; and (2) mobile support, with police, fireworkers, doctors, and other teams from distant places. With an A-bomb on Chicago surgical teams might be called on to come by air from as far away as Texas.

THE DISPLACED REGISTRARS

From Hospital to Practice ?

A. TALBOT ROGERS
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FIVE years ago, when the war was ending, hopes ran high for the rehabilitation and expansion of our hospital services, and it did not seem unreasonable to encourage many of the doctors returning from the Services, to take up posts as registrars and train themselves for careers in an expanding specialist field. The establishment of registrars in teaching and other hospitals was then stepped up and has not since been reduced, even though signs became apparent long ago that we had many more men in specialist training than we could really absorb into consultant posts.

Now suddenly, and probably inevitably, drastic action has been taken. The planners have, in effect, admitted their mistake; they have suggested a future establishment of trainees which will prevent too many from wasting their years preparing for posts they will never achieve; but by so doing they have created a new situation which itself needs analysis and positive and intelligent planning if further frustration and chaos are to be averted.

IMPLICATIONS OF THE REDUCTION

The immediate result of the reduction in registrar establishment will be that some 1200 doctors in England and Wales with at least five years' postgraduate training, and often more, will be without posts when their present contracts expire. Their absorption into alternative posts will be a formidable problem. It will be no less of a problem to find ways whereby their present hospital duties can be performed when they are gone.

But this is not the whole story. The new establishment allows of the appointment each year of some 550 registrars (1100 spread over two years) of whom 200 each year will become senior registrars (600 spread over three years) and 150 will eventually find posts each year as consultants. This means that of the 550 hopefuls who each year achieve the rank of registrar (presumably after each has already done some two or three years' postgraduate hospital practice) 400 will not

become consultants; and each year 400 will be seeking alternative employment.

Seen in this light, the present suggestion of directing some of the displaced registrars to specialist service in the Forces or in the Colonial Medical Service clearly provides no answer to the long-term problem. Where, then, can these men go? Can they be satisfactorily absorbed into general practice? It is quite plain that under present conditions they cannot. The suggestion fails at once on the score of numbers alone. There are between 18,000 and 19,000 doctors in general practice in England and Wales (about 17,000 principals and perhaps 1700 assistants). Few of them wish, or are able, to retire early. The numbers of new practitioners needed to replace those who do retire or who die is unlikely to exceed 500 a year; and the displaced registrars will not be the only candidates for these 500 places. They will have as rivals all those of their colleagues who have never aspired to registrar status, or who have decided as soon as their first postgraduate year was over that general practice was their métier and that the sooner they entered it the better. And as things are now it will often be the younger man with fewer commitments and greater readiness and opportunity to serve an apprenticeship as an assistant that will be more easily placed in practice.

Could not this annual figure of 500 places be stepped up perhaps with benefit to the under-doctored areas? It might be were it not for two difficulties: first, that of finding suitable premises from which the doctor could practise; and secondly, that of paying for his services. The first difficulty will remain as long as housing shortages persist and health-centre construction is deferred; the second as long as the present methods of computing and distributing the practitioners' pool remain unaltered. This central fund does not vary in size with the number of practitioners in the service. Every extra doctor joining the medical list makes one more to share a total financial allocation which no practitioner regards as adequate even for the present number. So if general practice is to be the destination of an appreciable proportion of the displaced registrars, new money will have to be found to pay them.

With the present completely separate organisation of hospital and general medical services, and with the tendency, too, for the hospital authorities to exclude the general practitioner from any but a most attenuated participation in the work of the hospitals, the ex-registrar would have difficulty today in finding a place in general practice where he would feel able to use to advantage the special knowledge and experience gained in his costly postgraduate years.

Does this, then, make nonsense of one of the Minister's suggestions for meeting the staffing difficulty in which regional boards may find themselves through the withdrawal of the registrars' services—namely, that

> "boards may appoint a suitably experienced general practitioner (normally one with a higher qualification and experience as a senior registrar or registrar) on a part-time basis to act as a clinical assistant. This is intended as a long-term method of meeting staffing difficulties in the senior-registrar field, and has the advantage of providing a valuable link between the general practitioner and the hospital services. In making appointments of this kind it will be necessary for boards to satisfy themselves not only that the practitioner has the experience and qualifications required, but also that his commitments in general practice will not prevent his devoting the time needed to carry out the duties of the hospital post."

It does, if all is left to a vague policy of laissez-faire, for the registrar will then be hard pressed to find a place anywhere in general practice, let alone somewhere where a hospital appointment suitable to his special training is also available. But given a coördinated policy between the regional hospital boards, the executive councils, and the local medical committees, the Ministry's proposal could provide a method of entry into practice which would at the same time be to the advantage of the registrars, the hospitals, and general practice.

PLAN FOR COÖRDINATION

The initiative in this matter must lie with the regional boards. Theirs is the chief problem—that of ensuring that the work of the hospitals continues when the registrars are gone. Theirs, too, is the chief moral responsibility for seeing that all that can be done is done to help the men who have in their years of training helped the hospitals so much.

With the reduced establishment of registrars it will obviously now be necessary for the regional boards and boards of governors to re-examine every present post and determine whether it shall still remain a registrar appointment. Many of the posts which give less favourable opportunities for teaching or for gaining specialist experience will no longer be classified as registrar appointments. Where this is so, and the duties of the post cannot be absorbed satisfactorily by the remaining establishment, the regional boards should consider whether they could obtain the extra help they need by creating one or more part-time clinical assistantships. If so, they should consult with the local medical committee, which alone knows of the potentialities of general practice in the area and the extent to which the commitments of the local practitioners allow of their participating in hospital work. Possibly among the practitioners already established there may be one suitable to take on the required duties. More probably it will be necessary to advertise the post with a view to finding someone of registrar status to fill it. In this case the regional board should decide the number of weekly sessions it is prepared to offer, and should state the remuneration this work will carry. The local medical committee will be able to advise on the opportunities the doctor appointed will have of supplementing his hospital work by general practice, and the limit that should be put to his general-practitioner work bearing in mind his hospital commitments.

Quite apart from the definite attraction of association with the local hospital, the fact that even at the start the doctor would not be a total liability to any practice he joined, but would carry with him an income in his own right, should make it easier for him to find a place as partner or assistant in an established practice. Moreover, nowadays quite a number of small practices are falling vacant in which the numbers are too small to justify the appointment of a successor; and these practices are dispersed. Such a practice could often be quite satisfactorily taken over by a man with a part-time hospital appointment, as a nucleus on which he could build. Then again there are areas where local conditions (as in a growing town) would make it possible for a doctor, even when starting on his own, to build within a reasonable time a large enough practice to provide, with his hospital salary, a passable income.

Nevertheless some of the practitioners appointed will need to be subsidised beyond their hospital stipend while waiting for opportunities to enter practice, or for their practice to grow. If such subsidy is necessary, it must come from the regional board, for this is not a charge that the practitioners' present fund could reasonably be expected to bear.

NEED FOR A NEW APPROACH

Admittedly this is a revolutionary approach to entry into practice; but the situation facing the registrars is one in which no orthodox approach offers hope of relief. The essence of the scheme is that the onus of making the posts and of finding the money to pay for

them is placed on the regional hospital boards. More men will be placed in practice, but the total pool for practitioner remuneration will be augmented by money coming from hospital sources. Much, if not all, of this new money will come from sums originally set aside for paying registrars.

Among the matters that remain to be decided are terms of service and the amount of remuneration; the place the practitioner should occupy in the hospital hierarchy (would it be that advanced in the Oxford plan for the "area department team"?); the types of specialty that could be covered (some help might be obtained from the recent circular on S.H.M.O. posts); whether the appointment should be permanent from the start or only after experience has proved the practitioner's suitability for his dual rôle; and whether, at the practitioner's request, the type and extent of his hospital duties could be varied, the better to fit with his increasing commitments in practice.

These details can no doubt be settled at the proper time. At present it is important only to know whether the principle underlying this scheme is acceptable. If it is, and if it is thought worth a trial, the regional boards will need to act throughout in concert with the local medical committees and the executive councils. There are still few places in the country where machinery for close liaison between these bodies exists. For combined action such machinery should be set up without delay, for there is much to be done; and the sands, like the registrars' contracts, are fast running out.

FELLOWSHIP FOR FREEDOM IN MEDICINE

ADDRESSING the annual general meeting of the Fellowship on Nov. 18, Lord HORDER said that the tasks it has set itself were (1) to restore the morale of the profession; (2) to protect and encourage private practice; (3) to disillusion the public about the National Health Service in the face of political propaganda; (4) to call attention to its inherent defects, and to examples of maladministration and extravagance; (5) to advise practical remedies for the deficiencies of the Act; and (6) in particular, to permeate the British Medical Association with the ideals of the Fellowship. In every one of these respects, it had made progress; the morale of the profession had risen, the press and public were becoming critical of the service, and even of its underlying principles; and instances of extravagance and maladministration were brought to light every day. Lord Horder then defined the policy of the Fellowship on a number of other questions. It supported the claim of the B.M.A. for a just settlement of the betterment factor and it supported the British Medical Guild as an instrument which would enable the profession to withdraw from the service if necessary. It sympathised with the efforts of general practitioners to preserve their hospital facilities, and it was "agin" the closed shop. He likened the dream of the Welfare State to a phantasmagoria—"a series of optical illusions arranged for public display"—and said that the present situation would not improve until we awoke from this dream. He was not worried about membership—every cause had a ceiling, and perhaps 3000 was the Fellowship's ceiling. In any case, it had become the focal point of resistance to deteriorating standards, loss of freedoms, and personal frustration; its influence would inevitably increase.

Before the Chairman's address, Dr. A. C. E. BREACH defined the ways in which the Act should be amended. The powers of the Minister should be reduced, he said; there should be an independent court of arbitration to which either party could refer a dispute; and the penalising clauses of the Act ("an amateur attempt to short-cut the law") should be abolished. Hospitals should receive block grants to spend at their discretion; medical staff committees should enjoy a statutory right to submit advice; and the Minister should set up a central appeal mechanism for grading. Dr. Breach then turned to private practice and suggested that doctors should be able to regain the ownership of the goodwill of their practices. There should be free drugs for private patients, grants-in-aid for those who chose private beds, and facilities for anyone to "contract out" of the service and receive compensation from the State. He anticipated that the Government would require a guarantee that those who "contracted out" would not, at some future date, become a burden on the State, and he was therefore looking for an insurance company which would provide cover against all forms of sickness at a fixed premium, without a medical examination. He went on to say that the fellowship sought to promote its ideas by "introducing its leaven into the mass of the B.M.A.": its members were already playing a prominent part in B.M.A. activities and committees.

Dr. G. J. V. CROSBIE, another member of the executive, said that the general practitioners were losing touch with hospital medical officers. Practitioners should not only be provided with the full range of diagnostic facilities but should also be admitted to hospital practice. He then introduced Dr. T. W. MORGAN, of Kingston, who was loudly cheered when he described the action taken by him and his colleagues to retain the use of the Kingston Victoria Hospital; the meeting adopted a resolution in support of this hospital and of any others in a like situation.

Dr. A. D. KELLY, assistant secretary of the Canadian Medical Association, was asked to describe the insurance scheme which some divisions were offering the public as an alternative to commercial insurance or a State service. These schemes, he said, covered 500,000 persons against all forms of sickness, without any medical examination. Doctors received a proportion of the pool corresponding to the premiums paid into it by their patients. In his opinion, it was preferable to try and modify government policy before it had been translated into law.

Medicine and the Law

A Question of Diagnosis

As there seems sometimes to be an impression that medical practitioners guarantee infallibility, the judgments of the House of Lords in Whiteford *v.* Hunter, though they may induce a natural sympathy for the unsuccessful appellant, are professionally reassuring.

The facts of the case, which have already been recorded,[1] are briefly as follows. Mr. Whiteford, an American engineer, consulted a London surgeon, Mr. J. B. Hunter, in March and April, 1942. He alleged that his condition was then diagnosed as a cancerous growth in the bladder and that he was warned not to expect to live much longer, the growth being so far developed that nothing could be done for him. Thereupon Mr. Whiteford closed down his practice, gave up all his concerns in England, and went home to America to die. On his taking further advice in New York, Dr. Benjamin Barringer, emeritus urologist at the Memorial Hospital in that city, established the absence of cancer, found the patient to be suffering from chronic cystitis and a considerable bladder diverticulum, and cured him. Mr. Whiteford, suing Mr. Hunter for damages for negligence, was awarded £6300 damages by Mr. Justice (now Lord Justice) Birkett; the Court of Appeal allowed Mr. Hunter's appeal and on Nov. 16 the House of Lords upheld the Court of Appeal.

Mr. Whiteford's case was founded not so much upon negligent diagnosis as upon the criticism that, there being a close resemblance between real and simulated cancer, a diagnosis of cancer should not be accepted without a pathological examination. A plaintiff who claims damages for negligence must give particulars of the negligence which he alleges. The two specific allegations which influenced the court of first instance were, according to Lord Porter's opinion in the House of Lords: (1) the

1. *Lancet*, 1948, ii, 232; *Ibid*, 1949, i, 586.

omission to use a cytoscope before opening the bladder, and (2) the omission to take a specimen of the growth in order to make a microscopical test of the presence or absence of cancer. Dr. Barringer, giving evidence on commission for the plaintiff, stated that there was no difficulty or danger in either of these operations.

Lord Porter observed that all the medical witnesses in this country asserted that it was contrary to approved practice to use a cytoscope in cases of acute urinary retention; when the bladder was drained and collapsed, they said, it was difficult, if not impossible, to use a cytoscope effectively unless it was an instrument of the flushing type: Mr. Hunter did not possess such an instrument; it was rare in this country at the material date. As regards the growth, Mr. Hunter had spoken of "an indurated mass covered with thickened mucous membrane abnormal in colour." Apparently Dr. Barringer, examining Mr. Whiteford in August, 1942, did not have in mind the condition found by Mr. Hunter in the previous April, when the bladder was opened. The circumstances in which Dr. Barringer opened the bladder were very different from those subsisting when Mr. Hunter made his diagnosis. Even if Dr. Barringer's evidence were accepted in full, said Lord Porter, no specimen could have been taken unless the cytoscope was fitted with a rongeur attachment; witnesses had proved that such an instrument was in 1942 rare in England and was not then possessed by Mr. Hunter. The two specific allegations of negligence having thus been dealt with, Lord Porter reaffirmed the general statement of the law which Lord Justice (now Lord) Maugham made in 1935 in Marshall *v.* Lindsey County Council: "A defendant charged with negligence can clear himself if he shows that he has acted in accord with general and approved practice." Mr. Hunter gave evidence in the trial court that his action did so conform, and two eminent surgeons had testified in support of his statement.

Mr. Hunter's vindication is a satisfying success for the legal experts whom a medical defence society can bring to the help of a defendant practitioner. In this litigation there was, through no fault of theirs, an adverse finding of fact in the court of first instance. To controvert and displace an adverse finding of fact, as Mr. Hunter's counsel managed to do in the Court of Appeal, is a task of known difficulty. The Medical Defence Union can be congratulated on the result.

Disabilities

53. MINER'S NYSTAGMUS

ON leaving school in April, 1914, my real desire was to be a farmer; I have always loved the country and still do. I suppose it would be because I thought I would make a little more money, and that my father and grandfather had been miners, that I went to the colliery. It was in the August of that year (the critical month in the history of this country), after working on the pit-head for a few weeks, that I went to the lamp-cabin, armed with a note signed by the colliery manager, and demanded a lamp. While I was thrilled at the adventure of descending the mine, still it was not my desire—the open field would have suited me much better.

I am not a tall man by any means, but at that time I was small—so small that, as I walked along the tubway, I had to keep lifting my oil lamp up to prevent it from knocking against the rails and going out. (The tubs—small wagons holding 8 cwt. of coal—run along this little two-foot-gauge railway.) After learning to harness and yoke a pony, I was taught to ride the limbers—iron shafts ending in a hook to fix on to the tub—and thus became a driver. Time went on, and at 18 I became a putter, taking tubs to and from the hewer, a much more strenuous job, for which I was paid by the score of tubs put. This meant, besides lots of other things, competition with other putters.

In 1926 there was a spell on the dole for a month or so, my colliery having closed down; and after that I became a hewer with a hand pick. This again was piecework and meant competition with other men. One must get as much as the next man, unless there is a vast amount of difference in the nature of the coal, no matter what advantage he may have in size and strength. Looking back, I can see that it was the constant strain of working in a poor light, and striving to produce the same as other men in my district, that began the trouble with my eyes. I don't recall any pain then, but I remember that after only a year of face-work, I often had to put my hand out and touch a prop to steady myself while walking in-by to the place where I was working. By this time I was married with a small family, which added to my responsibilities. The struggle through the 1926 strike, and extremely hard times after, had all meant nervous strain, and as the years went on my eyes became gradually worse. Many times I thought of going to the doctor about them, but the prospect of a small compensation or sick-pay was not encouraging; so for over twenty years I went on as I was.

At home, and in any public buildings I had (and still have) to shield my eyes from the light, and in the pit the torture of a light in front got more acute. Later still I began to have a sensation of dizziness when stooping; sometimes even when looking down at my plate while sitting at the table. What made me go to the doctor eventually—in April, 1949—were the severe pains I began to get in the back of my head. Even while I was in bed these pains were frightening; and besides I began to stumble when rising to my feet.

My doctor wrote a note to an eye infirmary, but it was not until November that I was sent for to be examined. I came back with a letter from the surgeon, and after this my doctor's certificate (I was off work at this time with my eyes) said that I had nystagmus. At once the National Insurance authorities sent me to their doctor, who disagreed about my case; so I couldn't claim industrial-disease benefit. About three weeks later I was sent by the insurance authorities to a specialist, and he also was not satisfied. It seems that, though I had many of the symptoms of the disease, they couldn't at that moment find any oscillation. Eventually, after a few weeks, I was sent to a lady doctor, who evidently decided I had nystagmus, for the following week I received a little over £8 from the National Insurance—the difference between sick-pay and industrial-disease benefit for the few weeks I was off at the end of last year.

After I had been off five weeks I asked my own doctor if I could go back down the mine. He was surprised, but said I could try; and I have been at my old job at the coal-face ever since. I have still got the trouble, as bad as ever, but I have learnt that resting when I can helps me to manage my work. Nothing else eases my head pains; and if I couldn't rest for a day or two now and again I should have to leave my work altogether.

A few weeks ago I received a kind invitation from a medical college to be examined for the cause of nystagmus research. It was rather strange to have an electric cap put on my head, and someone in the next room studying, so it seems, the inside of my head. And on my second visit the questions I was asked were innumerable—two hours of questioning. But I didn't mind because I was resting my eyes, and my full pay was assured. Then I was invited to attend an eye infirmary, and answered more questions; this time my wife was asked too, and she answered questions on our home life. In all this I was really treated like a gentleman and not just one of a mob.

I go my way trusting in God, working, resting when I can, and not worrying overmuch.

Parliament

Transferred Patients

IN the House of Commons on Nov. 13, Mr. EDWARD HEATH called attention to the problems which arise when a doctor's list of patients has to be reduced. In the early days of the health service nothing had been done to implement the decision that lists should not exceed 4000, and accepted patients had assumed that they were on the selected doctor's list for good. Early this year the Ministry of Health, in agreement with the medical profession, decided that lists must be reduced. Doctors with an excess of patients were asked to take a partner or assistant, or indicate the names of the patients who were to be removed from their list. If a doctor declined to do either of these things—and he had the right to decline—the local executive council took the matter in hand themselves. They had discretion as to the method they used, but the Ministry had produced a model allocation scheme.

Turning to the example in his own constituency of Bexley, Mr. Heath related how Dr. Green,[1] who had surgeries in both Bexley Heath and Erith, had over 5000 patients. As Dr. Green refused to take an assistant or partner, or to name the patients to be taken off his list, the executive council had drawn an ellipse round the area which included both the surgery and branch surgery of Dr. Green so that it would take in the maximum of 4000 patients. A notice had been sent to every patient living outside that area informing them that within seven days they would be struck off Dr. Green's list and must find another doctor among those on the Post Office list for the borough. Mr. Heath did not object to the reduction of the list, but to the way it had been done. The general turnover of a doctor's list, he understood, was between 300 and 600. Why, Mr. Heath asked, could not the list be closed and allowed to reduce itself to about 4200 in about eighteen months? He objected strongly to the geographical method; instead patients who had joined the list last should be the first to go. Seven days' notice, he declared, was callous. Patients who wished to change their doctor had to give three weeks' notice. Again was it too much to ask that the executive council on striking a person off a doctor's list should provide him with a list of the doctors whose lists were not yet full?

Mr. ARTHUR BLENKINSOP, parliamentary secretary to the Ministry of Health, did not think that the wording of the circular sent out in the Bexley and Dartford area was the best that could have been designed. It had always been the intention that a certain maximum number of patients on a doctor's list should be insisted upon in order to secure a proper service. No vacancies for new doctors desirous of entering the service could be provided unless some reasonable maximum figure on the individual list was fixed. Some members of the medical profession argued that 4000 was far too high. He appreciated that the reduction of lists caused hardship and a certain amount of ill-feeling among the patients concerned. The reason why lists were allowed to grow in the initial stages of the service was to be certain that families already on the lists were not ruled out. If Dr. Green had tried to help the executive council, as most doctors had tried to do, in carrying out this general decision on limitation, a great deal of the difficulty which had arisen could have been avoided. Not having the assistance of the doctor the executive council took what Mr. Blenkinsop regarded as on the whole a reasonable decision to try to rule out those patients who appeared to them to be farthest away from the doctor's main centre of practice. Any patients actually in receipt of treatment at the time would not be withdrawn from the list, and a patient excluded from a doctor's list could still get emergency treatment should the need arise before he managed to select another doctor. But Mr. Blenkinsop agreed that it was a point whether or not seven days was sufficient notice. He also thought that executive councils should give patients a list of other doctors in the area rather than merely refer them to the Post Office list. After examining the case as a whole Mr. Blenkinsop did not feel that the strictures on the executive council were really justified.

1. See *Lancet*, Nov. 18, 1950, p. 592.

Trade-union Membership

On Nov. 14, Dr. CHARLES HILL drew attention to Durham County Council's resolution requiring every member of their staff to produce evidence of membership of a trade union or professional association under threat of dismissal. He believed the decision to be wrong in three respects. It was damaging to a trade union or professional association to receive members under duress. Secondly, the local authority should employ the best qualified people whether they belonged to this or that organisation or not. Dr. Hill also believed it to be wrong for a man's job to be at the mercy, not only of an employer, but also of a trade union. The B.M.A., he continued, was a voluntary body and its attitude was that no doctor should be required to join any body, not even the B.M.A. If any local authority offered an advertisement for the *British Medical Journal* requiring the applicant to be a member of the B.M.A., it would be rejected. In 1946 when the staff of a maternity hospital at Willesden were told to belong to a union or leave, the Ministry of Health sent out a circular which ran:

> "The Minister wishes to make it clear to all local authorities that he considers that their primary duty as health authorities is to maintain the efficient and smooth running of their health services and to ensure the welfare of the patients for whom they are responsible. All other considerations must, in his view, be regarded as secondary and he trusts that local authorities will follow this principle in their administration. While the Minister is anxious that doctors, nurses and members of similar professions should join a trade union or appropriate professional association, he considers that this matter should not be determined by the unilateral action of local authorities."

Dr. Hill asked the Minister to repeat this advice.

Dr. H. B. MORGAN thought it reasonable to require an individual to join an organisation which might be a party in negotiations on conditions of employment. The Durham County Council were not telling the doctors that they must belong to the B.M.A. or the M.P.U., but they wanted to know that they were members of some representative organisation which could speak jointly for them and for other employees. Dr. HILL interposed that negotiating machinery for the most part existed in the Whitley structure.

Mr. BLENKINSOP said that the part of the 1946 circular which had been read to the House still represented the view of the Ministry of Health and indeed of the Government. They regretted the resolution passed by the Durham County Council. At the same time they were anxious that local authority and other employees in regular employment should join their respective trade union or professional body. They would certainly take the measures open to them—they were merely advisory—and draw the county council's attention to the circular issued in 1946, and the reply given in 1948 by the Minister of Health to a question in the House of Commons when he said:

> "I hope that persons employed in the National Health Service will be encouraged to belong to their appropriate organisations, but it will not be a condition of employment, and there will be no pressure upon anyone to belong to any organisation, whether professional or trade union."

The Doctor's House

In the House of Commons on Nov. 16, Miss P. M. HORNSBY-SMITH called attention to the method of appointing doctors to the new London County Council estate, area of over 3000 houses known as St. Paul's Cray. A large population was being transferred to the estate which gave scope for doctors to build up a practice. One would have expected these openings to be advertised, and that from the applications the Medical Practices Committee would select doctors to practise on the estate. During the past four months she had received protests against the active Communist activities of two of the four doctors appointed to a practice on this estate. She had therefore investigated the method of

their appointment and found that Dr. J. D. Paulett was granted by the L.C.C. a house compulsorily acquired from a private owner. Having got those premises he applied to the Medical Practices Committee saying that he had been granted the doctor's house on the estate and asked for permission to practise. At that time other doctors had submitted their names to the L.C.C. as wishing to practise, but only the name of Dr. Paulett appeared to have gone forward, and as there was only one applicant in the field the Medical Practices Committee had no option but to appoint him. One of the three other doctors who were later appointed also applied to the committee for permission to practise, saying he had premises and facilities given him by the L.C.C. Miss Hornsby-Smith urged that the position of the M.P.C. was prejudiced when they had only one name submitted to them and when that applicant claimed that he had the premises and that virtually he was allowed to start up in practice. The L.C.C. by deciding which doctors should be allocated a house from which to practise were in fact choosing the doctors on this estate and usurping the statutory right of choice of the M.P.C. She asked that applications by doctors wishing to practise in these areas should be submitted to the M.P.C. who could then say to the local authority "we choose doctors A, B, and C, and we look to you to provide accommodation for them." Mr. PERCY DAVIES: Is the hon. Lady saying that these doctors were chosen because they were Communists? Miss HORNSBY-SMITH replied that she thought the selection of names to go forward to the Medical Practices Committee showed signs of definite political prejudice.

Mr. ARTHUR BLENKINSOP bitterly resented the manner in which the subject had been raised, especially the implicit suggestion that the political views of doctors should be taken into account on their appointment. The whole medical profession desired to have freedom for doctors to set up practice. On the broader issue raised, he continued, any doctor might apply to practise in an area, and could only be refused if the area was overdoctored. Vacancies were advertised only when a sitting doctor withdrew or where the area was underdoctored.

Dr. CHARLES HILL thought this was an instance of a general difficulty underlying the machinery of the Medical Practices Committee. If a vacancy arose through the death or retirement of a doctor and it was decided to fill the vacancy, and the full procedure of advertisement and selection had been followed, then if a doctor—whether he was an applicant or not—had obtained by purchase or otherwise premises from which the practice was conducted, or the only appropriate professional premises in the area, it was difficult to make an effective choice of any other person. That was the difficulty which the Medical Practices Committee, with the coöperation of the medical profession, were trying to tackle. Whatever other issues might be involved in this case, there was, he urged, a general problem. It would be a pity, he thought, if the new National Health Service machinery were short-circuited by a local authority who named a doctor as tenant. He thought there was good reason for the L.C.C. to follow another method: to ask the official machinery to advertise the vacancy and to allot the house to the selected doctor. One general method should be adopted, approved by the Ministry of Health and under the supervision of the M.P.C., to avoid this instance of tenancy being the best part of the law.

Mr. BLENKINSOP said he appreciated the points which Dr. Hill had raised and the Ministry would be prepared to look into the question. What he resented so deeply was the implication that this was tied up with some preferential treatment for alleged Communists. There was certainly a problem in relation to doctors' premises, and he could give an assurance that the point would be considered in relation to the discussions which the Ministry were already having with the British Medical Association.

*** *See also p. 655.*

Penicillin (Merchant Ships) Bill

On Nov. 14, Lord SHEPHERD moved the first reading of this Bill. Its purpose is to amend the Penicillin Act so that penicillin can be used for the treatment of persons on board merchant ships which do not carry a doctor. Cases have occurred where members of the crew of a merchant ship suffering from an infected wound, for example, have not been able to have treatment with penicillin if there was no doctor on board. It is now felt that the experience gained in the use of penicillin makes it possible to define when it can and cannot safely be used. If the Bill is approved, advice on these lines will be included in the *Ship Captain's Medical Guide* which is carried on merchant ships in accordance with the Merchant Shipping Act, 1894.

QUESTION TIME

Incidence of Tuberculosis

Replying to a question Mr. A. BEVAN said that 52,041 cases of tuberculosis were notified in England and Wales in 1949. He thought that figure showed an increase. These increases were due to the fact that mass radiography was now being used. Although more cases of respiratory tuberculosis were being discovered—the increase in notifications being 5½%—there had been a decrease in deaths over the last five years of 12½%.

In answer to further questions he said that patients with early tuberculosis discovered by mass radiology tests were referred to a chest physician and treated according to their need and the facilities available. There was some delay in the provision of treatment, but fortunately the treatment which was being given was reducing the number of deaths. The general over-all position was certainly improving. He agreed that the real problem was the shortage of nurses. That was the reason why he had circularised hospital authorities asking them to make beds available for this type of case in general hospitals. He had had an interim report, and there had already been a very large increase in the number of beds available. Annual returns as at Dec. 31 last showed that the number of patients waiting for accommodation in tuberculosis hospitals and sanatoria was then approximately 11,000. He had been prepared to consider making use of the large number of beds available in Switzerland, but currency difficulties were involved. He would be able to give the House before long a report on the progress made in providing hospital beds for tuberculosis treatment in this country.

Increased Cost of Private Hospital Wards

In answer to a question Mr. BEVAN stated that the increases for private ward treatment in the Merseyside hospitals, where the costs had increased by 100% from July, 1948, up to September, 1950, were partly due to increased costs and partly to the fact that the charge now covered the full cost in all cases.

Mr. H. D. OAKSHOTT: As the use of private wards must relieve the pressure on public wards, will the Minister consider reducing the charges for private wards? Mr. BEVAN: That would really mean that a larger number of people would be able to pay for beds at the expense of others.

Replying to Mr. G. H. OLIVER, Mr. BEVAN said if he was supplied with particulars of cases where admission to hospital was medically urgent and had been refused he would be glad to make inquiries. Mr. OLIVER: Is the Minister aware that I have sent him particulars of a case where the patient after waiting for 11 months to enter a hospital was able to obtain admission as a private patient in less than 11 days?—Mr. BEVAN: If the patient was not suffering from anything requiring urgent medical treatment no problem arises, but he had no right to go into hospital ahead of people in greater medical need. Mr. OLIVER: But if the patient was not suffering from something requiring urgent medical attention why could he enter the hospital as a paying patient in under 11 days?—Mr. BEVAN: I quite agree about that and I will investigate the matter if particulars are sent to me. I am far from satisfied with the way in which it is possible for doctors to get their private patients into hospitals.

Cost of N.H.S. Prescriptions

Mr. R. H. TURTON asked the Minister whether, in view of the evidence received from the Joint Pricing Committee for England that the average cost of prescriptions per person from Jan. 1 to Sept. 30, 1949, was 11*s.* 4½*d.*, he was prepared to review the present dispensing capitation fee of 6*s.* 6*d.*

paid to doctors who supplied medicines to patients on their National Health Service lists.—Mr. BEVAN replied: No, Sir. The figure quoted and the fee are not comparable. In addition to the fee, pro-rata payment is made to the doctors for certain individual items supplied.

Part-time Nurses

In answer to a question Mr. BEVAN stated that the number of part-time nurses had never been higher than the present total of 25,000. It was about 17,000 when the National Health Service began.

Imports of Aureomycin

In answer to a question Mr. BEVAN stated that 140,075 grammes of 'Aureomycin,' apart from small quantities for sample and trial purposes, had been imported from the United States of America during the nine months ended Sept. 30, 1950.

Food Allowances for the Tuberculous

In answer to Miss M. P. HORNSBY-SMITH, who asked why the priority ration of an extra ounce of cooking fat and bacon was no longer included in priority food rations granted to sufferers from tuberculosis, Mr. MAURICE WEBB said in view of the present levels of the bacon and cooking fat rations his medical advisers were satisfied that there was no need to continue these extra rations.

Reciprocal Insurance Benefits

Sir WILLIAM DARLING asked the Minister of National Insurance what countries had accepted reciprocal insurance arrangements with the United Kingdom; and if she was taking further steps to widen the area of such arrangements.—Dr. EDITH SUMMERSKILL replied: Reciprocal arrangements are in operation with Northern Ireland and the Isle of Man for National Insurance, Industrial Injuries Insurance, and Family Allowances: with the Irish Republic for Sickness, Maternity, and Unemployment Benefits, and for the insurance of seamen: with New Zealand for Family Allowances: and with France for National Insurance and Industrial Injuries Insurance. A multilateral agreement on social security signed by the five Brussels Treaty Powers has been ratified by this country. Negotiations are taking place for further agreements with Australia, the Irish Republic, France, Belgium, the Netherlands, Luxembourg, Denmark, Italy, and Switzerland. Negotiations with the Federal Republic of Germany are due to begin next month. The possibility of making bilateral and multilateral agreements on social security similar to those made by the Brussels Treaty Powers is being examined by a Committee of Experts set up by the Council of Europe.

Industrial Pneumoconiosis

In answer to a question Dr. SUMMERSKILL said that since July 25 she had extended insurance under the Industrial Injuries Act against pneumoconiosis to persons using power-driven tools to free metal castings from adherent siliceous substances. She was fully aware that pneumoconiosis required very careful investigation and therefore she was referring the whole matter to the Industrial Injuries Advisory Council.

Public Health

Poliomyelitis

IN England and Wales notifications of poliomyelitis during the week ended Nov. 11 were: paralytic 161 (147), non-paralytic 64 (57); total 225 (204). The figures for the previous week, compared with which there was an increase of 21 notifications, are in parentheses. Notifications for the corresponding weeks in 1947 and 1949 totalled 210 and 316.

Total uncorrected notifications for 1950 up to and including the week under review are 7972. The corresponding figures for 1947, 1948, and 1949 are 8475, 2113, and 5905.

Significant increases compared with the preceding week occurred in Cheshire (10), Dorset (10), and Durham (6). The most significant decreases were in Warwick (5) and Denbigh (5).

It is unlikely that this check in the recent steady decline of notifications is more than transitory.

In England Now

A Running Commentary by Peripatetic Correspondents

THE brief suspension of the *Radio Times* reminded me of an experience In England Then which I have always wanted to record. "Then" was the first week of the late war. I had left my family on holiday and come home a day or so before war was declared to look after the house, which then, odd as it now seems, lodged two maids. I found (to quote E. M. Forster) "panic and emptiness": no practice, no work of any kind except a little laying of sandbags to make street shelters; not even war—only rumours. Time passed slowly.

I don't want to libel the B.B.C., but unless memory plays me very false everything on their printed menu was scratched and the listening ear and hungry soul were fed exclusively on news, inevitably bad, on boasts of the incredible number of beds provided for tomorrow's civilian gassed and wounded, on calls to action strongly tinged with "take cover" and "safety first," and on something that for want of a more descriptive name must be called music.

I felt compelled to listen, in case some real news came through, and because I had nothing else to do; but it brought me very low. There was no real war, nothing dropped from the skies, and yet, it seemed, every flower of our civilisation was as dead as dahlias after the first frost, and weeds were rushing in to fill the gaps. Once before "the lights had gone out all over Europe," but then at least there had been darkness and the flash of guns; this time it was as though every decent light went out at one puff or switch-off and in their place shone neon signs advertising chewing-gum. Up to now, wars had been heralded by drums and trumpets; ours came in to the wailing of saxophones and the moans of the crooner. Trumpets, if there were any, had mutes in their mouths.

I had suffered before from cardioptosis but this was a notable attack. The heart may not have reached the boots but it sagged deep into the pelvic cavity and there it stayed for an eternity of days—perhaps seven—and then the thing happened. It happened, I think, at some unlikely time of day and unannounced—probably it followed official instructions about "evacuation." There was the sound of an orchestra tuning up, a pause, and then—as it were a skylark singing in November—the Overture to the Magic Flute.

The heart, beating wildly, rose from the pelvis to the upper thorax, traversing the diaphragm, which for some time went into fibrillation. Presently both heart and diaphragm settled down, and that is the end of the story; but who, I still want to know, was the unnamed national hero who assembled and conducted that orchestra and chose that work to play? Who were the players—angels from Heaven? How many, besides myself, walking in darkness, suddenly at that moment saw a great light? How many, eleven years later, dare not tell that simple story by word of mouth because they would again be seized by fibrillation of the diaphragm?

* * *

Years ago, the hospital outpatient who didn't know the ropes was lucky to be seen by the consultant within four hours, and many spent the day on the job; but I had hoped things were different in these halcyon days. Apparently I was wrong.

Three weeks after a small orthopædic operation my wife received a card summoning her to Mr. X's 10 A.M. outpatient session at a teaching hospital in the provinces. After a twisty 15-mile car journey, she duly reported to the orthopædic subsection 5 minutes before time. Queues stretched in all directions. With the simple faith of the novice she asked a porter where Mr. X held his clinic. "Let me see your card," he replied. "Why, you should be in the *general* outpatients along there." She hobbled a painful quarter mile in the direction indicated to further queues. No hoarding enlightened her search, so she inquired for Mr. X's clinic from another porter. "Never 'eard of 'im," he retorted, "but since 'e's orfapedic it'll be in the orfapedic outpatients quarter mile along there." "But I've just come from there," she

remonstrated. "Well, then," he said, "they've told you wrong, me dear—see." Now completely bewildered, she asked a passing lady doctor, who thought Casualty Sister would know, and Casualty Sister said she'd ring the chief outpatient secretary and find out. An hour after the appointed time the reply came: "Mr. X's clinic is where you first reported." So back she went, got a card from one secretary, took it to a second secretary, and was given an appointment for another day. On producing her original summons she was reprimanded and told to sit at the bottom of the queue. Hours dragged by. At 12.45 she was at last ushered into the holy-of-holies—and seen by the house-surgeon.

She was late home, and I needed the car to drive 25 miles to my afternoon clinic. So my poor patients had a distressful wait. The bitterest pill came two days later, when I bustled into my other hospital to find that the outpatient department had been remodelled and restaffed while I was on holiday. "Where are Surgical Outpatients being held," I asked a pert young piece behind the office window. "Take your place at the bottom of the queue and you'll find out," she said. I will not record my reply.

* * *

"Please come quickly, Doctor. Grandfather has died of the soup."

I had just returned from a holiday, where I whiled away many a stormy afternoon following Detective-Inspector Alleyn or Mr. Albert Campion in their relentless pursuit of homicides; so even as I grabbed my bag and accompanied the agitated young lady across the road to her house I had the whole story clearly in my mind.

He Died of the Soup made a good title. I should be told that after taking his first mouthful of soup the old man leapt to his feet, gasping "I've been poisoned," and then crashed to the floor, his rubicund complexion turning a dusky blue. I should detect a faint odour of bitter almonds. There would be four suspects: the unmarried daughter, whose proposed marriage had been banned by her father only yesterday in a stormy scene; the married daughter with whom the father had lived and whose life he had made a misery; her husband, who needed the old man's money to pay his debts and start a business; and finally the attractive young granddaughter, apple of the old man's eye, who was leading me over, and who by all the rules of detective fiction must have done it. I stole a glance at her with my steely grey eyes (I had decided to be an Alleyn, though my habitual vacant expression would better suit a Campion). She was registering horror and grief so well that for a moment I thought they were real; then I remembered the theatre-club photograph I would find on the dining-room piano, with her in the centre as Cleopatra, and her secret histrionic skill was revealed.

Less than two minutes had passed since the tragedy when I was ushered into the dining-room, determined to miss no clue. But a single glance at the body shattered my reconstruction of the crime. For the old man had evidently pitched forward on to the table, taking his own plate of soup in the waistcoat and his son's on the forehead. Now he lay crumpled in his chair, the streaks of pea soup down his face clashing hideously with his purple lips and mauve cheeks. On auscultation no heart-beat disturbed the stillness.

A horde of small grandchildren hung round the door, their eyes bright with the prospect of missing afternoon school. "Do something, Doctor," their mother begged tearfully, while her husband clumsily patted her shoulder. It was the work of a moment for me to fill a syringe with 'Coramine' and plunge the needle between the old man's ribs. Five seconds later he drew a deep breath and then began to pant steadily. I gazed fascinated. The light died out of the grandchildren's eyes, the daughter's sobs gave place to a less becoming sniffle, and her husband dropped her shoulder and went out to the kitchen. The air was heavy with disapproval of my tampering with the course of nature. In a few minutes the old man opened his eyes, looked long at me, and finally glared at his married daughter. Then he set the seal on my discomfiture. "Who," he asked peevishly, 'told you to send for the doctor?"

Letters to the Editor

PHYSICAL AND BIOLOGICAL EFFECTS OF ATOMIC EXPLOSIONS

SIR,—Medical readers of your correspondent's very able article on this subject will probably agree with the author's last sentence. They will "find it difficult to remain optimistic." If in addition to the effects of atomic explosions they consider the hazards from biological and chemical warfare, and all these added to saturation bombing with high explosive and incendiaries as well as guided and rocket missiles, optimism will indeed seem misplaced. But why be either optimist or pessimist? why not realist?

Your correspondent gives an excellent précis of the American book on the subject, with a few interpolations of his own to which he is of course entitled.

Nearly all the information in the book, and a good deal besides, has been in the hands of those working at Civil Defence measures for a considerable time; and since I have had more opportunity than many to become conversant with the extensive research, surveying, and general study going on in a dozen centres in this country, and many more elsewhere, I think it important to insist that, however bad a business total war would be, a resolute trained and informed public (the nation at war), with all the aids that would be forthcoming, would find that they had it in their power to face any attack. The losses might be frightful but need not be overwhelming. We have the resolute public. We must have the informed and trained public.

E. ROCK CARLING.

*** As a basis for the realism Sir Ernest demands, we are publishing articles on the medical implications of new methods of warfare. We do so because the risk of war, in this country as elsewhere, can no longer be ignored by the profession, which must prepare itself for what it may have to do. To some of us the Civil Defence training of 1938–39 seemed largely futile: what could the citizen hope to achieve, against air attack, with a bucket and shovel? But the authorities were right then, and they are right now, in bidding us learn to do what we can. This will always be more than we suppose possible.—ED. L.

REVOLT AT KINGSTON

SIR,—Your article of Nov. 11 raises four distinct issues on all of which your conclusions, which showed a considerable hesitancy as if you knew the whole story had not been told, were far from correct.

1. The first issue is that of the regional hospital board's failure to consult or consider local feeling and its refusal to give information as to its plans and the reason for them. The issue raised is how does a board give the public that information if the whole press, lay and professional, refuses to publish it? Local papers, with the exception of the *Richmond & Twickenham Times*, have given entirely one-sided and inaccurate versions of the proposals. Nationally, news has to be "exciting"; so the "revolt of 26 doctors" becomes more important and space-worthy than the plans of the R.H.B. to provide the best possible service for 225,000 people having only some 1100 beds with which to do it.

On Nov. 5 one newspaper used more than a column of its scanty space to a statement of the case against the R.H.B. On Nov. 10 the hospital management committee heard a statement by its chairman which in six foolscap pages, handed to the press, set out the board's policy as he saw it. On Nov. 12 the same newspaper published 14 lines on the subject without one word of that statement.

How can we then tell the public the facts if this is how the press treats them? The press has been present at every meeting of both R.H.B. and H.M.C. at which this

question has been discussed, and all reports on it have been made available to them.

2. The second issue is who is to decide on the best use of hospital beds and how is the decision to be reached? If the amount of consideration given to the Kingston Victoria's case is not enough, what more must be done? Here, briefly, is its history. In 1938 the Surrey Committee of the Nuffield Provincial Hospitals Trust discussed the future of the hospital and asked local views on the question. In 1941 the two Kingston hospitals were used as an outstanding example of how *not* to organise a hospital service in discussions on the B.M.A.'s Medical Planning Commission, which declared that "from the two separate hospital systems there should be evolved one coördinated system, unified centrally and locally." In 1942 a committee met in Kingston to discuss this and other health problems and the Victoria Hospital was represented at these meetings. In 1948 the G.P.s who had previously exercised a close control on the number of doctors using the Victoria, began to add both G.P.s and specialists to the staff in order to forestall changes under the N.H.S.

Then came the medical review of the region, when a subcommittee of the board's medical advisory committee visited the Victoria and met the whole of the staff. I had the privilege of attending both as a member of the evidence-collecting committee and as one of the Victoria's staff. When asked what was the greatest need of the *district* the reply was, unanimously, "maternity and gynæcological beds, with orthopædic a close second." This was confirmed later when the local borough council sent a resolution to the board calling for increased maternity accommodation and when the Kingston medical advisory committee declared that "the provision of an adequate gynæcological unit must be the first consideration."

Those opinions were considered by the medical review committee, by the Surrey area committee, by the maternity subcommittee, and finally by the region's medical advisory committee which decided on the present scheme. It is a gross misrepresentation to talk of the Victoria being closed down. There are 10 male beds to be moved, and that is all the change from the patient's angle. It will cease trying to do medicine, surgery, gynæcology, urology, E.N.T., and eyes in 32 beds with a total medical staff of 34, while the real Kingston Hospital (older and doing 80% of the work of the district) is also doing all these jobs across the street. As the Hospital Survey (Gray and Topping) showed, this area has less than half the beds it needs and must use them to the maximum.

3. But what about G.P. beds? The South-West Metropolitan Regional Hospital Board and its medical advisory committee are on record unanimously as in favour of providing such beds as it can for G.P.s, in the terms of Circular 132 of the Ministry, for such things as are within the competence of the family doctor. The average bed occupancy of the Victoria last year was 33 and the board has offered 38 in exchange. It has offered money to make such changes as the G.P.s want, and it expected coöperation in a trial of how G.P.s can staff and run a hospital inside a hospital service mainly based on specialists.

But we must not exaggerate this question. In the country as a whole not more than 10% of G.P.s have hospital beds and not more than 5% of the total of hospital care is given by G.P.s. Kingston Victoria Hospital was in transition, with G.P.s playing a smaller and smaller rôle as the years went on. At neighbouring Richmond the G.P.s have themselves changed their hospital to a specialist unit without any public outcry at any time. In this hospital group there are 121 G.P.s. There are no beds solely under G.P.s. All the smaller hospitals have regular specialist cover. The regional board's offer to equip the Surbiton Annexe for the G.P.s, to be run and controlled by themselves—as many of them as cared to accept the invitation—should have been welcomed as a first attempt to deal with "one of the potential weak spots in the service."

Let me add that the staff at Kingston Hospital are in the closest touch with the G.P.s of the area and that there is an open-access laboratory available; and that X rays can be obtained either by direct access at the Victoria or through the physicians at the Kingston Hospital—the choice being left to the G.P.s.

When the present changes at Kingston are complete it can be an excellent hospital group, with a G.P. hospital, 600 beds for acute medicine and surgery, 200 beds for chronic, sick, a 130-bed maternity unit and gynæcological unit, 60 children's beds, 48 for tuberculosis, 36 for orthopædics, and 30 for infectious diseases, with the long-established eye unit of 12 beds at Richmond.

4. Then why revolt and what is to be our attitude in the matter? Let me remind you that the staff at Kingston Victoria have never held a meeting to discuss this question. It is not accidental that those members of the staff able to put the matter in perspective have been excluded from any discussions that have taken place. The scheme has the support of the 80% of the population who use Kingston Hospital for all their major ailments. The same doctors who make so much disturbance about the Victoria send the bulk of their cases into Kingston Hospital. It must clearly be recognised that the small number of patients using the Victoria are the privileged section of the G.P.s' practice and that they are not unconnected with whatever private practice continues to exist or with the fact that 10 of its 32 adult beds have hitherto been Section 5 beds. The National Health Service and its agencies have to provide a service for the whole population not for privileged groups.

Wiser counsels must prevail. No patient will suffer medically by the proposed changes, but the longer the foolish revolt against the health service goes on the lower becomes the standing of the family doctor in the eyes of the sick. To ally oneself with one political party and use high-pressure publicity methods in a matter which is beyond the political stage, and at the same time to refuse to sit round a table with those who have the arduous task of running the hospitals, is to bring the medical profession into disrepute.

Kingston Group Laboratory. D. STARK MURRAY.

INTERNATIONAL SOCIETY OF HÆMATOLOGY

SIR,—In your account (Sept. 23) of the Cambridge congress of the International Society of Hæmatology in some places my real meaning has been lost. Since several of my colleagues have been quick to charge me with a complete change-about from my usual opinions, I make haste to try to make them clear.

In describing the session on "Hypersplenism," in which there were several papers dealing with splenectomy in leukæmia and related states, your report says that I "had seen no good results in eighteen splenectomies done for leukæmia." This is certainly not the case, since I have seen brilliant results occasionally. What I *did* say was that our own results did not warrant undue optimism for the relief of the anæmia by splenectomy in most cases of leukæmia. I thought that some degree of caution was necessary against the indiscriminate use of this operation in leukæmia. The unkindest cut, however, was a statement that the discussion had confirmed my growing opinion "that hypersplenism was a romantic subject devoid of scientific truth." In view of my known propensity to espouse the cause of hypersplenism vigorously and to try on every occasion possible to adduce evidence in favour of it, this statement hardly seems credible. I hasten to point out, therefore, that

I am still convinced (*a*) that hypersplenism exists, and (*b*) that a certain amount of evidence for it is present. Unfortunately, this is almost all in the clinical field and as yet no clear-cut experimental evidence has been brought to bear on the problem.

On my contribution to the discussion of "hæmolytic anæmias" the report again goes astray. It states that "experience with leukæmia, even when auto-hæmolysins were present, was uniformly unfavourable." This is by no means what I said, since I brought to the meeting the report of three cases of leukæmia or lympho-sarcoma with symptomatic hæmolytic anæmia treated with A.C.T.H. and in which the results of treatment were striking. The report goes on to say that "A.C.T.H. has been tried, since it is said to influence antibody formation, but the results were equivocal." This statement too is curious, in that the latter part of my paper dealt with the marked effects of A.C.T.H. in producing a reduction in abnormal antibody with at the same time dramatic remissions in the hæmolytic process. The results were anything but "equivocal."

Further on it is recorded that I considered "A.C.T.H. is *not* itself of practical therapeutic value in leukæmias." This might be a fair statement for the acute cases, but in certain of the chronic varieties, particularly with a hæmolytic complication, or in the terminal anæmia or the exfoliative dermatitis of certain cases of chronic lymphocytic leukæmia, the results were at times of considerable value and therefore must be considered to be of practical importance.

Two other small points. The report is headed "International Congress of Hæmatology," and is called "the third of its kind." Actually it was the second congress of the International Society of Hæmatology.

While in this critical mood, may I also take exception to a statement in your otherwise excellent leading article entitled Hæmatology? Here you say: "much hæmatology, of course, lacks a really scientific basis; witness the discussions on hypersplenism and hæmolytic anæmias." To those of us who have worked busily in these fields, particularly in the latter one, where considerable exact knowledge has been obtained, this statement is, to say the least, a little disconcerting.

WILLIAM DAMESHEK
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DANGER OF HEXAMETHONIUM

SIR,—I wish to reinforce the warning given by Dr. Hillis and Dr. Kelly in your issue of Nov. 11. In this department experience with hexamethonium is limited to five cases; but in one of these the reaction was far more severe than any yet described.

The patient was a man, aged 30, with severe hypertension, reaching 230/130 mm. Hg, which had, after thorough investigation, been diagnosed as "essential." His hypertension has been known to exist for 8 years, and 7 years ago he developed thrombosis of the central retinal artery. His heart is now considerably dilated, and he had signs of pulmonary congestion.

Test doses of hexamethonium bromide given intramuscularly and intravenously showed that he was unusually insensitive; even 100 mg. intravenously on one occasion caused only a slight drop in blood-pressure.

Hexamethonium bromide was then given orally over a period of 10 days, the dose being stepped up cautiously from 0·25 g. t.d.s. to 1·5 g. t.d.s. on the 10th day. No response of any kind was seen during this period, except slight constipation on the 7th and 9th days. The basal blood-pressure remained essentially unchanged at about 180/110 mm. Hg. On the morning of the 11th day he collapsed quietly and without warning when sitting in the w.c. He was not discovered for about half an hour, and was then found to be stuporose. His blood-pressure was 100/60 mm. Hg. The pupils were dilated and fixed, and his speech was slurred. He was incontinent of fæces, but bowel sounds were completely absent.

This condition persisted for 24 hours, though his blood-pressure rose to 180/100 mm. Hg under the influence of adrenaline and ephedrine. After this his blood-pressure rose spontaneously to its previous levels. Extensor plantar reflexes developed; the other signs persisted unchanged. The ileus recurred intermittently for 9 days, varying in severity from day to day. The cerebral condition is improving, but he is still drowsy and dysarthric after 16 days and has amnesia for the fortnight preceding his collapse.

The precise causation of these complications appears to be: (1) sudden excessive blockage of the autonomic ganglia (hypotension, pupillary paralysis, ileus, and incontinence); and (2) cerebral cortical ischæmia (drowsiness, amnesia, dysarthria, and extensor plantar responses).

This case strongly supports Dr. Turner's warning in his article of Sept. 2 that a new era of treatment has not come, and that the effects of so powerful a drug should always first be assessed in a hospital. It would appear to be very risky to use the drug indiscriminately in hypertension, either in the outpatient department or in general practice, until more is known about the avoidance of such complications.

J. DONALD BALL.
Department of Medicine, Postgraduate Medical School of London, W.12.

SITUATION VACANT

SIR,—Now that Bernard Shaw has gone, who will take his place as Hammer of the Doctors? A thorn in the profession's side for more than fifty years, Shaw nevertheless performed a valuable public duty as chief critic, for it will not have escaped the notice of observant onlookers how remarkably uncritical of itself is the medical profession. Every profession needs to be jolted out of its smug complacency at regular intervals, and as it is obvious that, in the case of Medicine, such a shaking up is very unlikely to come from within the profession, then it must come from without—from a layman and, moreover, from a prominent layman. The necessity for this is evident when one considers how seldom any word appears in the popular press in any way critical of the skill and competence of doctors. Such, of course, never appears at all in the medical press, and there appears to be a tradition among newspaper and other editors that the subject is taboo; only men like Shaw stood any chance of making their views known at all, because Shaw was news whatever he said.

Why the medical profession should enjoy such immunity is hard to understand, as it is essentially a public service and all public services must be open to critical analysis and review if they are to function efficiently. This is surely a fundamental of democracy, and the fact that the medical profession is so undemocratic in itself should not be allowed to interfere with this process. The lack of such frank comment in the past accounts in some part for the astonishingly poor historical record of the medical profession, a record which shows again and again that doctors, whether organised or not, have consistently obstructed progress throughout the ages, and were rarely in the van of social or medical reform. The persecution suffered by Lister and Simpson among others comes to mind as a notable example, and the opposition in more recent years to the establishment of the Ministry of Health and other progressive measures is in keeping with this tradition.

In short, then, we need some person or persons to keep us on our mettle, to expose deficiencies in medical practice and custom, to shake us out of the stagnant lethargy which will otherwise inevitably be our lot. Shaw, while in many ways falling short of the ideal, was a stimulating man to have around, as was Chadwick, who also scorned the doctors, before him. I suggest that some worthy successor to these two stalwarts be cordially invited to fill the vacant position.

ADAIR GIRBY.
London, N.4.

REGISTRARS

SIR,—The threatened cut in hospital registrar establishment seems to me inevitable, but I disagree seriously with its suddenness. A reduction of 50% in this group immediately—or possibly spread in a limited way over two years by retention in temporary gradings—is bound to cause serious unemployment and dissatisfaction. Unless this change is accompanied by a good deal of reorganisation, which it would seem impossible to institute overnight, the efficiency of many hospitals must be impaired. There is much truth in the suggestion that registrars do the work of hospitals.

The situation at my own hospital will serve as an illustration. The present staff for 450 acute and 300 chronic patients (the latter, I believe, seriously underdoctored and undernursed) is :

	Specialists	*Registrars*	*House-officers*
Full-time	8	11	10
Part-time (as units)	$1^3/_4$ approx.	$^1/_2$ approx.	nil

The cut can be expected to reduce our registrars to 6 (possibly 4 registrars and 2 senior registrars). For it seems to be a maxim of the hospital service to scale things up or down according to previous *local* standards and never according to national standards : the percentage change seems to be the only thing standardised. How shall we manage two large medical teams, two surgical teams, 30 gynæcology and 80 midwifery beds (expanding numbers), and anæsthetics—apart altogether from smaller departments—with these 6 ? Here are some possible ways :

1. *Work the specialists harder ?* This means the full-time staff, because, as is well known, part-time people are seldom at hand for emergencies. One colleague lives 20 miles away ; and the average distance for all of us is $8^1/_2$ miles. The hospital does an enormous amount of emergency work, and if a team had no registrar resident on duty, surgeons, physicians, and midwives would have to live in or risk being fetched back probably 10–15 times per month. This at present happens on the surgical firms when the registrar is on holiday.

The non-urgent work freed by the absent registrar would also be enough to make great inroads on the consultants' time ; and this would be a permanent obstruction to their routine work, and would seriously interfere with necessary consideration, discussion, reference, and so on.

2. *Work the remaining registrars harder ?* With rare exceptions this is impossible.

3. *Work housemen harder ?* This is possible in some cases. The big trouble is the question of responsibility by a rather "green" officer, especially at night.

4. *Appoint more specialists ?* Here is a partial answer, but there seems to be no immediate prospect of increasing the specialist establishment. As an example of the official frame of mind, S.H.M.O. regrading has been delayed till 1951. In any case we need resident responsibility, and there is no general arrangement or accommodation for this. My own department (anæsthetics) is already top-heavy—we have $1^1/_2$ non-resident specialists, and a full-time resident registrar.

5. *Appoint more housemen ?* Again a partial answer. First there is the difficulty about responsibility, already mentioned. Secondly there is a shortage of applicants ; and this is sure to become more acute for a time in special departments when the registrar bottleneck is narrowed. Housemen want supervision, which shortage of staff prevents ; experience, which we can offer freely ; a "handle" to a reference, which we cannot often give ; and pleasant surroundings, which we have not. Even now we cannot always fill vacant posts.

The Ministerial alternative of employing part-time general practitioners will certainly not work in most town areas. Again, we need locally resident people for emergencies : many of our G.P.s live away from the district.

I do not think one can argue seriously against the reduction of registrar complements, but the change ought to be a gradual one and accompanied by changes in organisation and staffing so that the work they now do will continue to be done.

London, E.11. E. J. W. BARNARD.

SIR,—It was reasonable to assume that behind the creation of large numbers of registrar posts during the last two years there was some general plan. If the health service accepted a man for training, having in mind the Spens report, it was natural to suppose that, with a planned scheme, there would be a fair chance of his obtaining an appointment for which he had been trained. It now appears that the Ministry of Health has at last realised, too late, that there are more registrars than can possibly hope for consultant posts with present establishments. (These establishments are, on Lord Moran's authority, only 56% of the optimum size.[1]) What is probably more to the point, expenditure has to be cut, and what more convenient way than to cut where politically the hurt is least and where those affected are, with assistants in general practice, the most vulnerable members of the profession ?

A registrar, like most others, now has a poor chance of obtaining any employment in general practice—let alone congenial employment—with general practice constituted as it is in many areas at present.

For the hospital service one risk of the cuts is that registrars will be concentrated in the teaching hospitals. No student can learn medicine properly without attending a hospital which serves fully a definite community, taking all comers who need attention, and associating itself with the general practitioners in the community. In London many non-teaching hospitals are beginning to satisfy these criteria. The Ministry's ruling may put a stop to this progress, which cannot continue without registrars with experience and with enthusiasm. Enthusiasm cannot be got,—still less maintained—unless these men have a future to look forward to. It cannot be got by staffing with junior hospital medical officers with no future, or by clinical assistants from general practice even if this were possible.

Many registrars are in the 30s with a wife and family to support and four to six years' war service behind them. For such men there is little attraction in the Armed Services, Middle East, or South East Asia. They have usually had quite enough of all three already. Moreover they, like many others in the Armed Forces and Colonial Service, are wondering what they would do on retirement at a relatively early age with a poor pension and family commitments. It is already extremely difficult for a man of 40 to get into general practice ; how much more difficult for a man of 50 or 55 ! Consultant practice would be out of the question.

The crux of the matter is that the Minister of Health plus some senior members of the profession would rather see the public get their bottles of medicine, wigs, false teeth, glasses, and administrators than make the necessary number of consultant appointments. There is now to be direction of labour by the old trick of economic blackmail. We were told that this would never happen again.

Εἶδον.

SIR,—At last the number of trainee specialists is to be reduced to something approaching mathematical equilibrium with the consultant posts available. Few thoughtful registrars can fail to welcome the impending finale of this most unsatisfactory epoch. Were the process of thinning to be as fair as possible in the circumstances, and were all hope not removed, hundreds, including myself, though bitterly disappointed, would be prepared, if unlucky, to bow before the axe. But there are portents in your annotation of Nov. 11 that the thing may not be done with equity ; and I wish to state two points of much importance.

In this annotation you say that a Scottish survey showed there to be many more vacant consultantships

1. See *Lancet*, Oct. 28, 1950, p. 493.

in branches such as radiodiagnosis, psychiatry, and tuberculosis than in general or orthopædic surgery. The Ministry, in its announcement published in the same issue, states that senior registrars should be appointed for a fourth year but rarely, and then mainly in such branches as neurosurgery and thoracic and plastic surgery. Referring to the Scottish survey you state: "These difficulties will no doubt be acknowledged in settling the distribution of registrarships within the new total establishment."

Perhaps I misapprehend, Sir, but that could mean that you favour giving a larger number of senior registrarships, pro rata, to these narrower specialties than to the basic crafts of, say, general medicine and surgery. With all deference to my friends in such branches, has not this tendency gone far enough? We already have a position in which, in all save pay, the status of the senior surgeon of a hospital is no more than equivalent to that of a junior member of a non-clinical specialty who happens to have been awarded consultant rank. Must expediency drive the authorities to give the plum registrarships to admittedly important, but smaller and less popular, specialties—to the detriment of the traditional status and wide sphere of usefulness of the general physician and surgeon?

My second point is of even more fundamental importance. We are told:

(*a*) As soon as possible the number of registrars is to be drastically reduced. Where necessary, they are to be replaced by part-time clinical assistants recruited from general practitioners "normally with higher qualifications and experience as senior registrar or registrar." Fair enough.

(*b*) At the end of his term of appointment the unfortunate registrar or senior registrar is to be ruthlessly dismissed, to make way for another—younger, cheaper, and equally expendable.

Cannot the Ministry see that this in no way solves the registrar problem? More and more trainee specialists will go through the mill and topple over into general practice. At the all-too-rare interviews for consultantship the same old faces will be seen, many now in general practice and holding clinical assistantships in their specialty. Constantly new faces will be appearing. The once-keen and proficient young man will, about the age of forty, cease to be short-listed and will become a disgruntled and therefore probably inefficient G.P. And one can see no relief from this position.

No, Sir. The answer is simple. Subject to the individual hospitals' discretion, the periods of tenure of the surviving registrarships should be lengthened, on a year-to-year basis, instead of being rigidly curtailed. We cannot all be consultants. It is fairest that the major disappointment should be shared among the younger doctors who are not yet deeply rooted in their specialty. The most brilliant and tenacious among them could still make the grade. But the pressure from below would slacken, and gradually a fair and reasonable proportion of the present generation of registrars would be absorbed into the ranks of the consultants.

E. G. HARDY
First Assistant, Department of Surgery.
Norfolk and Norwich Hospital.

SIR,—Your leading article last week is entirely inadequate as an analysis of the situation created by the cynical document from Whitehall which has been miscalled by its authors a memorandum on appointments to registrar grades.

This so-called memorandum is not related to reality, and carries a degree of cynicism in paragraph 12 which is an insult to the profession. The only proper action for the profession is to repudiate this irresponsible document, to remind the Minister that such lapses from moral sensibility will be treated with the contempt they deserve, and to place before the regional hospital boards a strong statement to this effect, coupled with constructive proposals for dealing with the situation. This course of action was unanimously endorsed at a recent meeting of the consultants and senior administrative personnel of the Archway group hospitals (whose membership comprises the staff of the Whittington Hospital, New End Hospital, and others), and we write to ask that you assist in making this energetic response to the Ministry's administrative lapse as widely known as possible.

Integrity and decency are still very much alive in our profession, and the only course that can be adopted by a profession conscious of its values and its dignity is to repudiate this offensive memorandum in its entirety, whilst signifying our desire to render to the regional hospital boards all possible assistance in solving an administrative problem which undoubtedly exists, which is not new, will take one or two years to solve, and requires thoughtful and considered action by the whole profession. It is not to be solved by the issue of dictatorial and ill-briefed circulars from Whitehall.

T. ST. M. NORRIS
H. E. S. PEARSON
J. M. ALSTON
A. F. MOHUN
CECIL D. COYLE.

Whittington Hospital,
London, N.19.

SIR,—I have just compared your editorials of the past two weeks with your footnote to a letter of mine published on April 2, 1949, in which you say: "Many more specialists are needed and it would therefore be a misfortune if financial cuts reduced the number of trainees."

I should like to make the following observations:

1. For years past even the best-informed authorities, you included, have been encouraging us to pursue our training as registrars, in anticipation of additional openings under a developing State service.

2. This has led to a situation where there are numerous men who have held higher qualifications for many years, and who have been carrying out responsible work without supervision. This experience will now be utterly wasted; for it is evident that, with the limitation of the number of consultant appointments, the surplus of senior registrars cannot be absorbed by the posts hinted at outside the State service.

3. If these men are to be sacked during the coming summer, does the Ministry and its medical advisors expect them to make a fresh start as assistants in general practice, in competition with their newly qualified pupils—but, alas, without the latter's recent training in midwifery, dermatology, and psychiatry? Ten years' specialisation does not make a good recruit for general practice. In any case, has the attitude of the local executive councils as to vacancies in general practice, or of the principals as to assistantships, been fully explored? Here let me briefly inform you of what the chairman of a local executive council in the North-East of Scotland said at a meeting of that body. This statement was published last week in the *Aberdeen Press and Journal* in question-and-answer form.

> "*Question:* Was experience in general practice a good thing in these applications [for a large rural practice]?
>
> *Answer:* We had an enormous number of applications from doctors who work in hospitals—well qualified men of the registrar class. But the committee considered that type of candidate was not the type who should get a practice of this size. It was too big a plum."

As to principals, will they accept a man of, say, 38 with an F.R.C.S.? The two I know, when asked, said candidly that they would not dream of it.

4. What machinery is envisaged for senior registrars to find their way back to hospitals as "general-practitioner part-time clinical assistants" (G.P.P.T.C.A.), and what would be their precise function?

5. The Ministry statement establishes that the training period for consultants should be five years. This, compared with the years of devoted and under-paid apprenticeship

that many of us older men and women have served, seems a little inadequate.

Finally, may I say that the problem has been treated without the least regard for the human beings involved? Surely this type of statistical approach, without an appreciation of individual capacities and qualities, can only lead to unhappiness and discontent.

SENIOR REGISTRAR.

*** Our correspondent's earlier letter was written shortly before the reviewing committees were due to complete their studies of hospital medical establishments; and the footnote to which he alludes was amplified in a leading article (May 14, 1949) in which we asked whether it was sensible "to allow these trainees, on whom the nation's money has been spent, to scatter a few short months before the hospitals' new complement of staff is made known." In both this article and a later one (Nov. 19, 1949) we drew attention to the disproportion between existing establishments of registrars and of consultants and pointed out the registrars' need for immediate information. We still believe that "many more specialists are needed"; but the health service is now operated within a limited total budget, and we believe that other claims may be even more pressing. This aspect is discussed in a leading article on another page.—ED. L.

SIR,—Of the many remarkable circulars issued by the Ministry of Health since the appointed day, R.H.B. (50) 106 on registrar appointments, summarised in your issue of Nov. 11, must rank as one of the most remarkable. It might have been thought that in planning an establishment, the volume of work to be accomplished and the needs of patients were factors to be taken into account; apparently, however, these factors must be given low priority. The army must not be allowed to expand, for otherwise there will be too many privates without prospect of attaining high rank. The winning of wars is a minor consideration!

Croydon. T. W. PRESTON.

SIR,—The decision of the Minister of Health drastically to reduce the establishment of registrars, and particularly senior registrars, can only be termed short-sighted and retrograde. Apart from the short-term result that more consultants must be appointed or the service to the patient suffer, this policy will lead to a serious reduction in the standards of service in the more distant future.

As the new distribution stands, there will be only one registrar trained for each consultant vacancy; and there is no guarantee that the registrar will have been trained in the right specialty when the vacancy occurs. Secondly, the new scheme does not allow for a margin of wastage in the ranks of the senior registrars themselves. The Ministry circular also points out the need for specialists in the Services, in the Colonies, and in other overseas appointments; but at the same time it cuts out completely the provision of training posts for men who might enter these spheres. The net result is that ultimately the average number of applications from senior registrars for consultant appointments will be considerably less than unity.

But the most serious result of all will be the elimination of the element of competition for consultant appointments. This must progressively lower the standard of our consultant service. The antedating of the competitive stage to the selection of senior registrars (and that itself only in part) cannot suffice, as many men emerge from mediocrity during the period of responsibility and experience provided by a senior registrar appointment, while in others weaknesses become apparent. In the Services, there must be a large pool of officers of the rank of commander, lieut.-colonel, and wing-commander from which future officers of flag, field, and air rank may be recruited. The wastage on retirement at commander and equivalent rank is tremendous but is accepted as quite inevitable. No-one would suggest that the number of lieut.-colonels be restricted to the number of vacancies in the post of colonel or major-general! The trained registrars must be kept up in numbers, not only to help with the work of the National Health Service, but in order to provide an adequate pool from which the best may be promoted to consultant rank. We cannot have the "pick of the bunch" unless there is a bunch to pick from.

The decision was probably made partly as a result of Treasury pressure, but also probably partly as a result of the registrars' own views. I do not believe, however, that their hardship and insecurity will be as serious as they have made out, and certainly no worse than that normally faced by registrars and chief assistants in pre-war days.

May we hope that your influence will be brought to bear to cause a reversal of this new, and I believe retrograde, policy.

Canterbury. F. G. ST. CLAIR STRANGE.

SIR,—The question of distinction awards, about which there has lately been much publicity, should be studied in the light of the economies now contemplated in relation to registrar establishments; for the displacement of 1000 registrars with an average income of £1000 per annum will provide the sum allocated for distinction awards.

The time has come for our leaders to say whether they are willing to see the younger generation crushed through mis-planning; or whether, even at this late hour, the present establishment should be left undisturbed so that the men and women affected can find alternative employment without being subjected to the grave anxiety of finding a post in the short time remaining to them. Does not the Hippocratic oath speak of the sharing of livelihoods between pupil and teacher as between father and son? We look forward to a lively correspondence by our elders comparable to that which we have seen from them concerning their distinction awards; so that it may not be said today that the distinction awards of yesterday will be followed by the extinction awards of tomorrow.

REGISTRAR.

SIR,—The imminent reduction in the registrar establishment prompts us to make the following observations; for we believe that this action, said to be in the interests of the registrar class, is, in fact, contrary to their wishes.

1. *Registrars are prepared for each to be in open competition with his fellows* believing this to be the most certain method of determining the individual best suited for selection to consultant status. He is willing to accept the risk that no consultant post may be available for him on completion of his registrar appointments, but believes that the better doctor he can become before entering either general practice or some special branch of the service, the better for the future efficiency of the service.

2. *The decision as to who will become consultants will in future be made too soon after qualification*—i.e., before there has been adequate time for all round experience to be gained or assessment of his capabilities to be made.

3. *The registrar is at present vital in a service which deals not only with the training of consultants, but also with the treatment of patients.* The long-term consultant establishment problem may be solved by a 40% reduction in the hospital registrars, but this will be accompanied by a reduction in the efficiency of the service. A great deal of the large volume of work at present being done by registrars will, in future, have to be done by senior house-officers, who are not qualified to do it. If they are sufficiently qualified they should receive the salary of a registrar.

We consider that it is against the democratic traditions of this country that an irrevocable decision affecting a large segment of the medical profession should be made without any reference to their views on the subject. We would suggest, therefore, that hospital residents and registrars throughout the country should meet to decide their attitude to this proposed change and that the Minister should thereafter take a referendum of their views.

Twenty-five Registrars and Resident Medical Officers, St. Luke's Hospital, Bradford.

THE PRACTITIONER'S REMUNERATION

SIR,—Your well-balanced annotation last week on the proposals of my organisation for a new basis of pay for general practitioners hits the essential nails squarely on the head.

Rightly or wrongly, the Negotiating Body pursued the original general-practitioner claims on the basis of a global sum to be divided subsequently as the profession saw fit. This method (which must be unique) has an advantage and a disadvantage—an advantage in that it leaves the distribution of individual doctors' pay to their colleagues, a disadvantage in that the Negotiating Body (G.M.S.C. or Whitley Council) cannot now sue for more money on behalf of an underpaid section as can other bodies of workers.

The argument has resolved itself into one about "betterment." Have the Spens Committee recommendations been sufficiently adjusted to keep pace with the rise in the cost of living since 1938? Of course they have not. All sensible men know this and any economist would confirm it. But is it likely that the Government, in considering the wage claims of any group, will agree to make large-scale adjustments dependent on continuous changes in the cost of living? Cabinet Ministers would want £8500 a year instead of the present £5000, M.P.s £1700 instead of £1000, and so on down to the humblest private in the Army. No doubt the G.M.S.C. have an unanswerable case for at least 70%—probably now nearer 90%—increase. The only trouble is that the case will not be answered. The negotiations will be spun out indefinitely ($2^1/_2$ years have already passed and the issues are as confused as ever).

You say that the G.M.S.C. is so sure of the soundness of its case that it does not fear arbitration. The claim is for at least £23 million (including retrospective payment) on behalf of a group whose average *net* income is not less than £30 per week. I beg leave to doubt whether an arbitration tribunal would grant this claim, and doubting this there is surely a strong case for instituting a claim for the lower-paid sections of the profession.

The other important issue is how any extra money should be distributed (whether it is £5 million or £7 million is immaterial). "Redistribution is within the power of the profession itself," you say. Yes, this is indeed true, but it is worth examining the machinery by which the profession exercises these powers. The Annual Conference, which determines policy, derives its power from the democratically elected local medical committees, but how do the latter settle matters of policy? The local representatives are not elected because of any special views they hold, but because they are respected individuals who will guard the practitioners' local interests (the L.M.C. is a statutory body set up for a *local* purpose). I am not sure whether these committees can decide national policy unless they know the views of the doctors who elected them. But there is no doubt that it is in these committees that such matters should be thrashed out, and it is there that we want the M.P.U.'s scheme discussed. If it is a bad scheme it will get no further. If it is a good one it will be carried to the Annual Conference and perhaps be adopted as official policy. That is all we ask. In our view this discussion should take place before money is available—not after.

One last point. You ask "Would the M.P.U. council still recommend their new system of remuneration if the Treasury refused to add to the central fund?" I cannot commit my council, but I feel it would answer that this is for the profession to decide. The scheme proposed is not a rigid one; it could be modified in a number of ways. Whether it is modified or rejected, it will have served one purpose if it stimulates discussion. The isolated overworked practitioner has neither the time nor the available data to draw up proposals of this kind. Some central body has to do this for him. We know that our scheme will not please everyone, but it has already elicited a very large number of interesting and important suggestions, as well as much uncritical support.

Medical Practitioner's Union,
55, Russell Square,
London, W.C.1.

BRUCE CARDEW
General Secretary.

MEDICAL EDUCATION OF AFRICANS

SIR,—Since 1941 the South African government have awarded five bursaries each year to enable Africans to study medicine at the University of the Witwatersrand, Johannesburg. These were recently discontinued by the present government; but, as the result of protests, the Minister of Education agreed to grant three bursaries for this year and next year only.

The government state that they intend at some future date to reinstate all the bursaries when their proposed non-European medical school is opened in Natal. The indications are, however, that it will be at least another two years before this medical school does in fact open, with a resultant break in the training of sorely needed medical men. The accommodation which is intended for the school consists of a disused army camp near Durban.

The following information from the *Handbook on Race Relations in South Africa*[1] will emphasise the seriousness of the position.

> "The present over-all ratio (of doctors) is 1 doctor to 3000 population; with variations from 1 to 400 or 500 in the largest urban centres, down to 1 to 30,000 in the more backward rural areas. . . ."
>
> "The death rate for Europeans which is slightly less than 10 per 1000 is as low as any in the world, but for non-Europeans it is 20 or over. Other mortality and morbidity rates reflect similar differences between European and non-European. The infant mortality rate for Europeans is less than 50 per 1000 live births; for natives it is not less than 150 anywhere and in some areas as high as 600 or 700. The maternal mortality rates, of 4 to 5 per 1000 births for non-Europeans, is twice as high as for Europeans. . . ."
>
> "The incidence of tuberculosis is so high and is rising so rapidly among non-Europeans that it constitutes probably the gravest health problem in the Union today."

South African students, anxious for the future health of the African community and fearing an indirect attack on the university's great tradition of non-segregation, are determined to replace the bursaries which have been removed, and, if possible, to supplement them further.

The students of the Witwatersrand have agreed voluntarily to levy an extra 10*s.* per annum on their fees towards the trust fund which has been set up with the approval of the university authorities. By itself this levy will not be adequate to replace the bursaries, and a public appeal has been launched to obtain donations to supplement the fund.

Each bursary consists of £250 per year for six years and takes the form of a loan, interest-free and repayable over a term of years. Thus, once the fund is firmly established it will eventually become self-supporting.

1. Published for the South African Institute of Race Relations by the Oxford University Press. Cape Town and London, 1949.

Over and above the amount levied from the students of the Witwatersrand University a sum of £1800 had been collected from the public by the beginning of May this year. Three bursaries have already been awarded for 1950 out of trust fund moneys.

The South African Student Association in London has been appointed representative of the fund in the United Kingdom, and inquiries and donations may be sent to the treasurer, at 46, Napier Court, London, S.W.6.

ENID CHARLES HORACE JOULES
ALEX COMFORT HAROLD SCARBOROUGH
LANCELOT HOGBEN G. BLACK.
JULIAN HUXLEY

THROMBOANGIITIS OBLITERANS TREATED BY HYPOGLYCÆMIA

SIR,—Last year Mazanek[1] reported very favourable results in thromboangiitis obliterans treated with hypoglycæmia induced by insulin.

We have applied this treatment in five cases of advanced Buerger's disease, but gave insulin only once a day, with an average of 30–40 administrations in each course. Our patients responded favourably after 1–3 courses, pain disappearing after the first few injections. Cicatrisation of necrotic areas seemed to be accelerated by injections of deoxycortone with vitamin C.

Blood-sugar values, which were subnormal in all our cases (56–80 mg. per 100 ml.) rose progressively to 116–126 mg. per 100 ml. at the end of 30 insulin injections (perhaps through stimulation of glucocorticoid-hormone production) and did not return to the initial low values after the 20–30 days' interval between two courses.

Electrocardiograms taken half-hourly during hypoglycæmic periods showed flattening and inversion of the T wave, especially in V_4, with return to normal when potassium was given by mouth. We noted remarkable elongation of oscillatory waves during hypoglycæmia, which we regarded as evidence of increased collateral circulation. It seems that insulin is not the only cause of this increase; probably autogenous adrenaline production, enhanced as a counter-regulatory mechanism to insulin, together with the significant fall of serum-potassium, also play a part.

JENNY FRANCO
SADI BELGER.
Gureba Hospital, Istanbul.

ST. PAUL'S CRAY APPOINTMENTS

SIR,—Considerable publicity has been given to Miss Hornsby-Smith's statement in the House of Commons alleging that the L.C.C. had "appointed" us to a practice on the St. Paul's Cray Estate, and that in doing so had shown us favouritism for political reasons.

In fact, of course, the L.C.C. is entirely unable to appoint general practitioners. Two of us are practising from privately owned houses because the L.C.C. declined to grant us accommodation. The two of us who have L.C.C. houses obtained them only after several other doctors had refused them. These facts must have been known to Miss Hornsby-Smith.

We feel quite able to defend ourselves against this remarkable attack, but the unprecedented event of doctors being attacked by name in the House of Commons and their right to their professional positions being questioned solely because of their alleged political views, should evoke an unequivocal reply from the whole profession.

L. M. FRANKLIN
J. D. PAULETT
R. TEPPER
E. TUCKMAN.

1. Mazanek, H. *Lancet*, 1949, ii, 935.

Obituary

NEIL FREDERICK SINCLAIR

F.R.C.S.

Mr. Neil Sinclair, surgeon to the West London Hospital, died at his home on Nov. 14.

He was born in Jamaica in 1885, the son of Dr. F. A. Sinclair. When he arrived in this country fifty years ago, to complete his education, he had few friends and little money. As with so many of the best, his student and early professional life were a struggle. In retrospect he considered this salutary, but there was a note of regret, for no-one would have enjoyed university life more than he. Yet there remained that great attribute, he was a perpetual student. The London Hospital early became and remained his alma mater. To him it was school, college, and university, and he was filled with admiration for it and its great men. He was proud that his son is now a student there.

[*Thomas Fall*

After qualifying in 1908 he held house-appointments at the London till 1912. He served with the R.A.M.C. in France during the 1914–18 war, and on his return he took his Edinburgh and English surgical fellowships. He went to the West London Hospital as surgical registrar, and he was appointed assistant surgeon in 1919. He quickly built up a busy consulting practice, and he was also on the staff of Chiswick, Northwood, Brentford, and many small hospitals. In 1933 he was appointed surgeon to King George Hospital, Ilford.

The founding of the West London Hospital Medical School gave Sinclair the opportunity for teaching which he welcomed, and his wealth of experience and anecdote made his ward rounds the events of the week. His paternal instincts warmed to his registrars and house-surgeons, and he was a kindly but discriminating patron of younger surgeons. His teaching was conversational; he avoided the lecture-room and preferred to teach at the bedside, in the outpatient department, or in the museum, by gentle control of question and answer; as he had learnt so he taught. He was in fact a great teacher; and his experience and ability were rewarded by his appointment to the court of examiners of the Royal College of Surgeons.

A colleague writes: "Many practitioners relied on Sinclair, and the large number of his doctor-patients was a measure of their confidence. It is true they were often kept waiting for his unhurried arrival; but this unpunctuality was essential, almost physiological, in maintaining his health and good spirits, and prevented any tendency to haste in examination of patients, curtness to relatives, or operating against the clock. His whole day was theirs, and his working day was a long one.

"Technically his surgery was excellent and a joy to watch; in action quick, yet free from haste, easy, neat, and rhythmical. He liked his instruments to be light and simple, and avoided the 'mechanical,' especially among the retractors. By deftness and dexterity he accomplished his high reputation as an operator. It was in the surgery of the thyroid and the upper abdomen that he was a master: by his gentleness shock was prevented and after-treatment minimised

"We shall remember him as the most friendly robust figure, never pompous, but fiercely jealous of the independence a clinician must command. That he disapproved of many of the changes time have brought is no secret; for his contacts with his colleagues and patients were personal and intimate, and anything that savoured of direction or remote control offended his independent spirit. Dividing, as he did, his time between that of his colleagues in hospital and in general practice, no wide gap could develop between them, and, to the

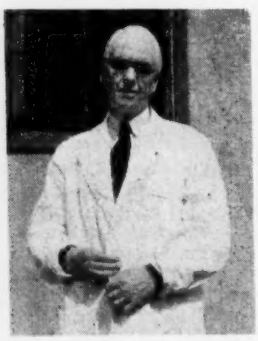
patient's benefit, there resulted that essential, continuity of treatment. Very many will have read of his death with sorrow. Not only was he from so many aspects, the ideal practical surgeon, but he had so many friends and acquaintances in the profession that the directory seemed only required to confirm his information."

STEPHEN ROODHOUSE GLOYNE

M.D. LEEDS, D.P.H.

Dr. Gloyne, who died on Sept. 25, aged nearly 68, was a Yorkshireman—stocky, matter of fact, sociable—who made his mark in London as a student and interpreter of respiratory disease. Though he was born at Peckham his parents soon returned to Yorkshire, and he went to school at Wakefield and studied medicine at the Yorkshire College before entering the Middlesex Hospital, where he worked for a year or two in the pathology department after qualification. In 1906 he took the first M.B. degree granted by the new University of Leeds, and in 1909 he proceeded to the degree of M.D. Meanwhile he had returned to London, taking appointments as assistant school medical officer to the L.C.C. and later to the East Sussex county council.

In 1911 he moved northwards to Victoria Park, where, as pathologist to the London Chest Hospital, he worked till 1948. During these years he attained without conscious effort a unique place in the life of the hospital. It was difficult to think of Victoria Park without also thinking of Gloyne. His laboratory became a museum and reference library, the rendezvous of the clinical staff, and a centre for teaching and research. Letters from his friends give a vivid picture of his qualities as a counsellor and a friend.



J. I. writes: "When Gloyne took up his appointment at Victoria Park the department was one room to the right of the front door of the hospital, and I do not think that any of us would have forecast the splendid department that developed from that modest beginning. Nor would we have expected Gloyne to have been the man to effect that development. He was no thruster, and at that time we little realised the force that lay beneath his quiet unassuming manner. A friend of many generations of residents, he came to be considered as the one constant member of a changing staff, and it was to him we went for news of the hospital. He had a very deep affection for Victoria Park Hospital, and to do any service for it or for anyone connected with it gave him real pleasure. He was one of those lovable men who, maintaining a very high standard for themselves, yet are very tolerant and sympathetic to the weakness of their fellows. I have never known him speak unkindly of anyone. In spite of his fundamental seriousness he was full of quiet humour. He was a delightful companion and a staunch friend."

H. W. takes up the tale: "During the 1914–18 war, he combined the rôles of house-physician, pathologist, and consultant rolled into one modest Pooh-Bah, the only regular doctor in the place. What he gained in clinical acumen and intuitive understanding from that grim experience will never be known."

N. L. R. continues: "It is in the comparatively spacious and tranquil days between the wars that those who knew Gloyne best will perhaps picture him most easily. It is pleasant to be able to remember those after-lunch gatherings which became a forum of debate where the most junior pitted his talents against such masters as 'Freddie' Chandler, Burton Wood, and V. S. Hodson. Gloyne excelled on these occasions. It mattered little whether the subject under discussion was a clinical problem, a knotty point of history, or a character from English literature, he, as like as not, from his habitual seat at the end of the sofa, would put the matter in its right perspective; or when as sometimes, happened, political sparks began to fly, he would, with his characteristic infectious laugh, disperse us all to outpatients in the best of humours. It is in this setting that we shall remember him—a scholar with wide interests, a fine pathologist and yet no mean clinician, but above all as one of the most lovable of men."

During the late war, when the hospital suffered severely at the hands of the enemy, and by the death of two senior members of its staff, Gloyne again came forward and shouldered a burden which perhaps no-one else could have borne. The loss in one night in 1941 of his laboratory, his museum specimens, and his new microscope he rarely mentioned. Instead he turned his thoughts at once to the hospital and its responsibilities. He and his wife placed their cottage in the country at the disposal of the matron as a rest centre for the nurses, and he played a prominent part in opening the country branch at Camberley. He was also an E.M.S. pathologist at St. Margaret's Hospital, Epping.

Among his colleagues in other specialties which marched with his own Gloyne made an equally lasting impression. Of his work outside Victoria Park E. L. C. reports:

"Two things were near to the heart of Gloyne and to both he gave of his best—and his best was good indeed. One was the journal, *Tubercle*. He superintended it from its inception and thereafter steered it through many perilous passages. And the more perilous the passage, the more, under his direction, did the journal emerge with enhanced status. The second was his interest in pulmonary diseases due to dust. He was among the first to recognise the unexpected toxicity of asbestos dust at a time when others were only prepared to accept silica dust as harmful. His studies will always be regarded as opening the door to the disease entity known as asbestosis. He approached it especially from the clinical and histological aspects, without relying too much on X-ray shadows. He told of what he had observed and his observations were always confirmed by others."

N. H. S., a fellow pathologist, writes: "For a great many years he was the only pathologist of any authority connected with thoracic work as a specialty. His investigations were practical in intent and within the range of an ordinary hospital laboratory, and his experimental work though simple in design showed that he could have done pure research just as successfully had he so chosen. His output in print is no measure of his learning. But his writing was concise, accurate, beautifully illustrated, and extremely valuable to those of us with the same interests.

Gloyne's influence was acknowledged in the field of industrial medicine. He was a part-time member of the Medical Board for Silicosis and Asbestosis from 1931 till 1948, and his colleague C. S. writes:

"Although the amount of work Gloyne did for the board was not large, the personal influence he brought made his contribution of the greatest importance. His profound knowledge of the pathological processes produced by dust, and his kindly method of showing it, stimulated the interest of all his colleagues, and his work on asbestosis made him for us the acknowledged authority on this form of pneumoconiosis."

As president of the Tuberculosis Association and Thoracic Society Gloyne's prestige and popularity were enhanced by the clear sanity and common sense of his remarks.

"He saw many changes in tuberculosis and chest work and recognised their worth and future value with uncanny accuracy," writes T. H. S. "His professional life was centred round the chest hospitals which he elected to serve in preference to higher academic posts, but his influence extended far beyond the bounds of thoracic pathology. And anyone who met Stephen Gloyne more than once cannot but have been impressed by the essential goodness of the man. In these days it is rare to find a man who had so many friends and admirers. The active little figure, white-headed almost as long as I can remember, acted as adviser and father confessor to the many who approached him with their problems. His counsel was kind and always helpful, though his comments were not devoid of a tinge of caustic wit—the bitter-sweet that could often act as a spur or corrective."

Soon after the war he was due to retire, and he was in doubt what life still had in store, when John Ryle invited him to work on industrial lung diseases at the Oxford Institute of Social Medicine. The statistical approach to pathology was novel to him, and the word "significant" took on a new meaning as he began to classify his records of over 1000 microscopical examinations of lungs. He found Oxford a pleasant place to work in: nothing taken for granted and human qualities respected more than elsewhere. As time went on retirement seemed to him another word for getting busier, and he had lately completed the life of John Hunter reviewed on p. 628. In 1948 he was awarded the Weber-Parkes prize of the Royal College of Physicians.

Of his continuing and varied appreciation of life, H. W. relates:

"When a man who for over ten years has had recurrent pyrexias loses in one night his unique collection of pathological specimens, he might well be soured. But Gloyne's interests never flagged, they seemed sharpened by adversity, the subjects over which his mind ranged widened rather than narrowed. His tenacity of purpose he may have inherited from his Yorkshire forbears; the way in which it was softened by humour and intuition was his own. His views were seldom expressed with Johnsonian bluntness, yet there were few subjects on which he could not talk. It was typical that his most intimate friend was a professor of Byzantine history. He read and re-read the English classics, not discursively, but one author at a time, from beginning to end. It was as essential to read *Evan Harrington* as to learn all he could from the trials of *Richard Feverel*. His holidays were spent studying the ancient abbeys, and he delighted his friends as well as himself by walking them through the Buckinghamshire he knew so intimately, or showing his sympathetic understanding of lord and peasant as he illustrated social history from the top of Bredon Hill."

Dr. Gloyne is survived by his wife and two children, the daughter an almoner, the son a pathologist.

WILLIAM GLEN LISTON

C.I.E., M.D. GLASG., F.R.C.P.E., F.R.S.E., D.P.H.

Lieut.-Colonel Glen Liston, who died at his home at Morar, Inverness-shire, on Oct. 18, was a former director of the Bombay Bacteriological Laboratory at Parel. He will also be remembered for his work as a member of the Plague Research Commission of 1911.

Born in 1873 at Secunderabad, where his father was stationed as an Army chaplain, he was educated at George Watson's College, Edinburgh, and at the Albany Academy, Glasgow. In 1897 he graduated M.B. at Glasgow University and in the following year he entered the Indian Medical Service. During his training course at Netley one of his teachers was Almroth Wright, then professor of pathology at the Army Medical School, and soon after Liston arrived in India in 1893 he was sent to help Wright in the work of the Indian Plague Commission. In 1899 he was transferred to military duties at Ellichpur, in Berar, where he studied malaria, and particularly anopheles mosquitoes, and took part in relief work in the famine of 1899–1900.

In the next year he joined the plague laboratory at Bombay under Haffkine, but he continued his studies on mosquitoes and with the help of Dr. Turkhud prepared detailed drawings of the anopheles found in Berar and Bombay. S. P. James, who was attached to the Royal Society's commission for the study of malaria, was struck with these; he suggested that they should produce a joint work using the drawings prepared by Turkhud, and the result was their beautifully illustrated monograph on Indian anopheles.

In their report in 1901 the Royal Commission on Plague virtually rejected L. F. Simond's hypothesis that plague was spread by fleas from plague-infected rats (*Ann. Inst. Past.* October, 1898). But the idea gripped Liston. He at once began studying fleas as he had mosquitoes, and at Netley, where he had lately been appointed to the staff, Almroth Wright gave him every help. On his return to India in 1902 he was posted to the laboratory at Bombay, under Haffkine and Bannerman, and for two years Liston and Bannerman gathered and sifted evidence of the relation of rats and fleas to plague in man—under considerable difficulties, for Haffkine was failing in health and was subject to curious obsessions which hindered research. An accidental contamination of one phial of the plague vaccine with tetanus, which had happened when Liston was away at Netley, had cast a shadow over the laboratory. The Government of India sought to put matters right by sending Bannerman to Madras, and Liston, much crestfallen and despondent, to Sambalpur as civil surgeon. A few months later both were recalled to the laboratory, and Haffkine was appointed to a special laboratory in Calcutta. Liston's first duty was to reorganise the preparation of the plague vaccine. Maynard's method of bottling was introduced, and the whole procedure, with rigid tests for purity and sterility at every step, was so good that it remained unchanged for the next 25 years.

His important paper on Plague, Rats, and Fleas in the *Indian Medical Gazette* in 1905, which confirmed that "rats are the most important factor in the spread of plague," and gave many observations, his own and others', supporting the view that rat fleas convey plague from rat to rat, from rat to man, and from man to rat, aroused fresh interest in his work. The Secretary of State consulted the Royal Society and the Lister Institute; an advisory committee at home and a working commission in India were set up, and Liston's services were placed at the committee's disposal. When the commission reported, Major George Lamb, the director, pointed out that its work was a coping-stone to careful and tedious investigations already carried out in India and elsewhere rather than an original building. In 1907, the commission was temporarily dissolved; Bannerman was promoted surgeon-general and moved to Madras, and Liston became director of the Bombay Bacteriological laboratory. Here every member of his staff could be sure of a patient hearing, encouragement, kindly criticism, and valuable suggestions. The laboratory was several miles from the centre of Bombay, but Liston hardly ever missed a daily visit to one or other of the three large hospitals, and many of the Indian practitioners took their problems to his laboratory.

During the first world war, with a depleted staff, he took charge of a convalescent hospital for infectious diseases, particularly typhoid and paratyphoid fevers, from the army in Mesopotamia; and the laboratory, besides its ordinary work, undertook the search for carriers and their care. After the war he enlarged the laboratory, adding a biochemical unit and a unit for the study of Indian indigenous medicines. He also planned the large modern hospital which now stands next to the laboratory, and he all but succeeded in starting a school for tropical medicine in Bombay. He retired in 1924.

After his return to this country he joined his old Service friends, Colonel W. F. Harvey and Colonel Anderson McKendrick, in Edinburgh at the Royal College of Physicians' laboratory as bacteriologist. The Colonial Office appointed him their consulting physician for Scotland. He retired from both these posts in 1947.

MATTHEW BURROW RAY

D.S.O., O.B.E., M.D. EDIN.

The war of 1914–18 sharply divided Dr. Ray's career. The earlier part was largely spent in Yorkshire where, after graduating M.B. from the University of Edinburgh in 1893, he held posts at Eston Hospital and the West Riding Asylum. Later he settled in practice at Harrogate where he joined the staff of the Harrogate Infirmary and laid the basis of his practical knowledge of hydrotherapy. As anthropologist to the Wellcome expedition, he visited the Sudan, and in 1913 at the International Congress of Medicine he described human remains he had examined in an Ethiopian cemetery.

During the 1914–18 war he had a distinguished military record. For his services as officer in charge of No. 3 casualty-clearing station and as senior medical officer at Amiens he was appointed D.S.O. in 1917 and mentioned in despatches. Later with the rank of colonel he became A.D.M.S. 47th (2nd London) Division of the Territorial Army.

After he was demobilised Dr. Ray settled in London. "In the early twenties," writes C. B. H., "Ray worked with the late Dr. Fortescue Fox to secure for London a treatment centre in rheumatism and arthritis that would

be a credit. When these labours came to a successful end, by the formation of the British Red Cross Clinic for Rheumatism, Dr. Ray was appointed the first honorary physician. Thereafter for a long period he gave loyal and steadfast service that set a fine example to his medical colleagues, and was of great benefit to the staff and patients at this unit. In 1948 he was appointed O.B.E. in recognition of this service." He continued to work at the clinic till in 1948, on the introduction of the National Health Service, it was attached to the Middlesex Hospital as the Arthur Stanley Institute for Rheumatic Diseases. He was also physician and director of the department of physiotherapy at the St. Marylebone and Westminster General Dispensary. His publications include *Rheumatism in General Practice* (1934), which gave a general survey of the disease and a review of its several manifestations in different regions of the body, and *Hydrotherapy and Climatotherapy* (1936) in which he classified and described spas at home and abroad in accordance with their main therapeutic indications. His mind was both vigorous and versatile. His pictures shown at exhibitions of the Medical Art Society will be remembered for their individuality, and he was an expert in cabinet-making.

Dr. Ray is survived by his widow, Edith, daughter of the late Lord Henry Cholmondeley and widow of Captain R. E. Heaven. He died in London on July 5 at the age of 80.

AMY FLORENCE WAKLEY

THE only daughter of Thomas Henry Wakley (joint editor of THE LANCET from 1886 to 1905) and eldest grand-daughter of Thomas Wakley (founder, and editor from 1823 to 1862) died at Burwash, Sussex, on Nov. 14. Her father lived to be senior fellow of the Royal College of Surgeons, and she herself was in her 95th year when she died; the three generations, from the birth of Thomas Wakley in 1795, spanned between them a century and a half. She was small and spirited, full of the family wit, and is said to have kept track of the large and growing company of Wakleys and of those who are connected with them. Many of her kin came to her funeral service, some meeting as old friends and some as young strangers. This hardy strain, deriving from Devon farmers, inherits the vitality which made Thomas Wakley an outstanding character.

Births, Marriages, and Deaths

BIRTHS

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ROSS.—On Nov. 13, in London, the wife of Dr. John Ross—a daughter.

TAYLOR.—On Nov. 18, in London, the wife of Mr. Selwyn Taylor, F.R.C.S.—a daughter.

TODD.—On Nov. 8, in London, to Dr. Olive Todd, wife of Dr. K. R. Todd—a daughter.

YOUNG.—On Nov. 9, at Macclesfield, the wife of Dr. F. R. Mackinlay Young—a son.

MARRIAGES

BENNETT—BALDWIN.—On Nov. 15, at Colwyn Bay, F. J. Bennett, M.B., to Jessie Baldwin.

DEATHS

CARLING.—On Nov. 15, at Alton, Hants, William Carling, M.B. Camb., aged 88.

CLARK.—On Nov. 15, in Glasgow, John Sawers Clark, M.C., M.A., M.B. Glasg., D.P.H.

FINSTERBUSH.—On Nov. 15, at Reading, Edmund Finsterbush, M.D. Vienna.

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LONDON'S HOSPITALS AT A GLANCE

A NEW map of the London hospitals has been prepared by King Edward's Hospital Fund[1] to supersede the one they published in 1944, when the N.H.S. was still no more than a twinkle in Mr. Willink's eye. They have had a much harder task this time, but have succeeded in presenting the large amount of complex information with the help of four colours, a fine variety of symbols, and some connecting lines. The map shows the location, function, and ownership of all the hospitals in the Metropolitan Police area; how they are grouped under management committees; and the boundaries between the territories of the regional boards. The hospital map proper is superimposed on an ordnance survey map printed lightly enough to avoid interfering with the essential symbols but perhaps not quite darkly enough to tell strangers where they are: it might have been better to include only the river, main landmarks, and a few major roads. Nevertheless the whole effect is not only clear but decorative. An alphabetical index and a classified index, bound into a little booklet, are supplied as a key to the map.

THE CHILD AND THE FILM

THE cinema, with its mixture of values, good, bad, and mediocre, and its large claims on the national time and attention, can be regarded either as a telescope sweeping the horizons of the world or a microscope magnifying criminal behaviour—a fount of education or a device for corrupting morals—depending on the outlook of the critic. The idea that it must be largely responsible for the rise in juvenile delinquency is widely held, though mainly by those who are not regular cinema-goers. The Departmental Committee on Children and the Cinema,[2] which reported last May, concluded (with one dissentient) that the evidence as a whole did not "fasten on the cinema any primary share of responsibility for delinquency or moral laxity of children under 16." What secondary share it may have must be a matter of conjecture: some think it instructs children in methods of crime, others that it glorifies brutality and equates success with money-getting, others that trouble is caused not by the cinema but by the need to get the money to go.

The committee based many of their conclusions on the results of an inquiry made by the Social Survey during 1948, and these results have just been published.[3] Though they add nothing new, they give a more detailed picture than the committee's report, and deserve study. It will be remembered that the committee recommended a new classification of films to replace the current classification of "U" (for universal exhibition), "A" (for exhibition to adult audiences), and "H" (horrific films, for exhibition when no children under 16 are present). These categories are admittedly unsatisfactory, because a child can see an "A" film provided he is accompanied by an adult and in Scotland he can see "H" films too. The Social Survey found that of the children who

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2. H.M. Stationery Office. Pp. 107. 3s.; and see *Lancet*, 1950, i, 916.
3. Children and the Cinema. By J. C. WARD. Central Office of Information, 1950. NS. 131. Pp. 100. 10s. post free. Obtainable from the librarian, Social Survey, Montague Mansions, Crawford Street, Baker Street, London, W.1.

had been to the cinema in the week before they were interviewed, about a third had seen only "U" films, nearly half had seen "A" films only, and about a sixth had seen some of each. The departmental committee favoured four different classifications: "X" films (to include the present "H" category) from which children should be absolutely excluded; "C" films, to be shown at children's cinema exhibitions; advisory category "U," for family entertainment; and advisory category "A," preferably for adults. Admission of children to the last two categories would be unrestricted.

Whether these reasonable recommendations are to be put into action or not, the time has almost certainly come to review the criteria on which films are classed as suitable or unsuitable for children. In a recent programme *Captain Boycott*, a film dealing with the conquest of injustice by peaceful means, was classed as "A"; while the trailer for a forthcoming "U" film showed savage fighting, machine-gunning, and other scenes of violence.

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THE British Standards Institution has issued new standards for hospital bedsteads for general purposes (B.S. 1682/1950), and for paper boxes for pills, tablets, ointments, pastes, creams, powder, and crystals (B.S. 1679/1950).

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On Nov. 18, the honorary degree of D.SC. was conferred on Dr. Oscar Vogt, director of the Berlin Institute for Brain Research.

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On Nov. 11 the degree of M.B. was conferred on S. E. Birdsall.

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At a recent examination for part II of the D.M.R.D. J. B. Fox and Zbigniew Lachowicz were successful.

University of Birmingham

The title of reader in medicine has been conferred on Dr. K. W. Donald, and of reader in surgery on Mr. B. N. Brooke. Dr. M. B. Conran has been appointed lecturer in bacteriology, and Dr. K. Aterman lecturer in biophysics. The following clinical lecturers have been appointed:

Obstetrics.—Dr. Jean Hallum, Dr. G. S. Lester, Dr. L. M. Park.
Radiology.—Dr. J. C. Bishop, Mr. W. H. Bond, Dr. O. E. Smith.
Dental Surgery.—Dr. R. F. Pusey, B.D.S.

Mr. J. A. Stallworthy has been appointed Ingleby lecturer for 1951. Prof. Edward D. Churchill, chief of the general surgical services, Massachusetts General Hospital, Boston, will take part in the surgical work of the teaching hospitals during the spring term.

On Nov. 21 a hostel, which will accommodate 12 students while they are doing their midwifery training, was opened at Dudley Road Hospital. It is to be called the Hilda Lloyd Hostel.

Scottish Conjoint Board

At recent examinations for licentiateship of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow the following were successful:

W. St. C. Bauld, T. L. Bowden, Wilfred Brabbin, Louis Brinberg, J. P. Capel, Semon Caplan, J. T. Davidson, J. W. Davison, Donald Duck, Ruth M. Eaton, R. Y. Forbes, Isabel M. Forster, Marshall Frieze, K. M. Graham, J. G. Green, A. I. Hutchinson, J. L. W. Johnson, Anna M. M. Lepper, Veronica R. E. Lethbridge, T. J. McCabe, R. H. G. McKay, I. T. McLachlan, A. M. Muir, Denis Murray, P. A. O'Brien, Arthur Pollok, Anne McK. Rodger, Bertram Schulberg, Hareebrun Bunsee Singh, P. I. Sless, B. D'A. Smith, Leslie Steen, I. S. Trotter, E. G. C. Valerio.

McGill University

Dr. Eric Wittkower has been appointed assistant professor of psychiatry. He will take up his appointment in Montreal next March.

University of London

At recent examinations the following were successful:

M.B., B.S.—David Burman, M. W. Cemlyn-Jones, P. J. Chapman, S. S. Epstein, D. I. Fryer, L. G. Goodwin, P. E. B. Holmes, C. B. Ingor-Willey, R. P. V. Jayewardene, R. S. Jelliffe, *D. J. Jenden, Neil MacDonald, F. W. O'Grady, T. H. Roffe, M. K. Sawday, Geoffrey Walker (with honours); R. G. Adams, D. G. E. Alldridge, J. D. B. Andrews, Barnett Bass, D. A. Begg, Marion Berry, C. N. Best, Margaret E. Beynon, N. P. Bhandari, Irene F. A. Blakeney, A. G. Blyth, Elizabeth M. Bough, J. L. Bowen, Betty B. Boxall, T. L. Bradbeer, C. J. Bradfield, Yvonne J. Bradfield, R. O. Brettell, J. E. Bridger, W. Y. Brooks, D. E. Brown, O. F. Brown, K. M. Bryant, N. L. Bucky, M. G. Budden, S. H. Burges, Patricia M. Bushell, R. P. Butt, Gordon Canti, R. J. A. Carey, S. J. Carne, W. I. Carter, P. J. Chesterman, J. W. Cieszynski, P. H. Cims, D. A. Clements, N. F. Cockett, R. A. Cocks, R. F. Coggins, Sheila D. Cooper, C. H. Corby, A. H. Cox, Elizabeth P. Cracroft, A. J. I. Dacre, Mary G. C. A. Dale, R. A. Davidson, Aldwyth H. Davies, J. W. Davies, W. H. G. Davies, J. G. Dawe, Geva B. P. de Winton, P. L. C. Diggory, Stanley Dische, F. B. Dobbs, Winifred B. Drew, B. H. Du Heaume, W. R. Edwards, Alison M. M. Fleming, N. S. Galbraith, O. P. Galpin, M. F. Gardiner, F. P. A. Garton, Angela M. Geere, M. J. Gilkes, Derek Goldman, A. M. Goldstein, Edwina R. Goodall, Helen Gordon, Roy Goulding, John Gower, B. P. Green, C. R. Greenacre, E. J. Griffiths, P. W. W. Griffiths, Stanley Hacking, Antoinette I. Hallett, C. P. Handforth, H. R. Hewitt, P. G. Higgins, June R. Hill, R. R. W. Hill, R. F. H. Horn, Harry Horwitz, B. J. Hovenden, J. G. Howard, St. C. M. L'A. Hubbard, E. R. Huehns, F. T. Hunt, Sylvia R. Ingold, Diana H. Ireland-Jones, M. C. H. Jackson, Elsie S. Jaikaran, Brenda James, G. C. Jenkins, F. G. Johnson, M. H. F. Johnson, D. R. Jones, R. J. B. H. Jones, Ann Kiln, A. E. Kingston, G. W. Korn, E. B. Kraus, A. C. K. Lawrence, D. A. Lawrence, J. J. Lesser, Shinmen Liu, J. W. McCloy, D. H. McFerren, K. A. McNeill, I. J. MacQueen, G. W. Marsh, Nancy A. H. Marston, J. A. M. Martin, Michael Mason, Jennie C. Maurice-Jones, A. R. May, Arnold Melinek, A. L. Miller, John Minnis, Cornelius Molloy, David Montague Jackson, Margaret C. R. Moore, Doreen P. Morgan, P. D. Moyes, A. R. Moynahan, D. J. F. Munro, R. W. Nash, B. E. C. Nordin, S. F. Oakenfull, K. J. O'Connor, A. L. C. Packham, H. J. G. Palmer, Kathleen M. Parker, Mary Parsons, J. K. Paterson, Dina Patuck, D. L. Pedersen, R. D. Peduzzi, J. R. P. Pegg, H. F. Pile, J. D. Pollitt, W. E. B. Preston, C. F. G. Prideaux, K. G. Prior, Rebe S. Rainsbury, J. H. Reading, Doreen M. Reside, Mary Rhoderick, G. A. Roberts, Margaret E. Robson, Israel Rocker, E. H. Roffey, J. K. Ross, P. W. Ruggles, R. H. B. Sacks, Barbara J. Salisbury, J. F. Santer, J. N. McM. Schofield, John Scorey, W. C. Scott, D. I. Segall, S. A. Seligman, S. J. G. Semple, Pauline M. Seymour-Jole, I. M. Sharpe, E. M. Shipsey, Isabel G. Smith, D. P. Smyly, R. S. Somers, Theodore Spiro, Vivian Stanhill, Charles Steer, F. P. Stephens, P. B. Stewart, K. H. Stone, L. R. Sweetman, P. K. Sylvester, Gwendolyn R. Tapp, P. K. Thomas, D. J. G. Tilley, W. L. Timmins, J. A. Tottle, A. F. Tuohy, C. L. Tutty, Lilian S. Underhill, John Vaccaro, Raymond Vickers, M. F. Vickery, F. H. Walker, I. H. Wallington, A. V. Watts, T. P. S. Watts, D. M. Webster, R. H. C. Wells, Mary F. West, E. J. Williams, J. L. Williams, F. P. Willis, M. L. N. Willoughby, M. A. Wilson, Hellmuth Windschauer, Maurice Wise, M. E. Y. York-Moore, J. P. W. Young, T. M. Young.*

* University medal.

Royal Institute of Public Health and Hygiene

On Monday, Tuesday, and Wednesday, Dec. 11, 12, and 13, at 4.30 P.M., at 28, Portland Place, London, W.1, Sir Leonard Parsons, F.R.S., will deliver the Harben lectures, entitled Studies on Child Health.

International Course on Child Psychiatry

On Nov. 12 some 30 psychiatrists, pædiatricians, and social workers from 19 countries in Europe, the Middle East, and Latin America began a course on this subject in London. Their programme was arranged by the British Council, with Dr. Kenneth Soddy and Dr. Emanuel Miller as advisers, and it forms part of a course arranged by the Centre International de l'Enfance, the first part of which was held in Paris.

British Congress of Obstetrics and Gynæcology

At this congress, which is to be held at Leeds from July 8 to 11, 1952, the following subjects have been chosen for discussion: abnormal uterine action in labour, stress incontinence of urine, the place of the pædiatrician in a maternity unit, and genital tuberculosis in the female. The secretary of the congress is Mr. B. L. Jeaffreson, 32, Park Square, Leeds, 1.

Faculty of Ophthalmologists

At a meeting of the council on Oct. 13, it was reported that the following committee had been recognised by the Minister of Health to deal with future admissions to the Central Professional Committee's list of ophthalmic medical practitioners: The Hon. G. J. O. Bridgeman, Mr. Nigel Cridland, Mr. N. P. R. Galloway, Mr. J. J. Healy, Mr. H. B. Ingram, and Mr. E. G. Mackie. It was agreed to ask the faculty's representatives to propose that no ophthalmic medical practitioner should be admitted to the list unless he held a contract with a hospital, from S.H.M.O. grade upwards, and that if he relinquished his post he should cease to be included on the list.

be a credit. When these labours came to a successful end, by the formation of the British Red Cross Clinic for Rheumatism, Dr. Ray was appointed the first honorary physician. Thereafter for a long period he gave loyal and steadfast service that set a fine example to his medical colleagues, and was of great benefit to the staff and patients at this unit. In 1948 he was appointed O.B.E. in recognition of this service." He continued to work at the clinic till in 1948, on the introduction of the National Health Service, it was attached to the Middlesex Hospital as the Arthur Stanley Institute for Rheumatic Diseases. He was also physician and director of the department of physiotherapy at the St. Marylebone and Westminster General Dispensary. His publications include *Rheumatism in General Practice* (1934), which gave a general survey of the disease and a review of its several manifestations in different regions of the body, and *Hydrotherapy and Climatotherapy* (1936) in which he classified and described spas at home and abroad in accordance with their main therapeutic indications. His mind was both vigorous and versatile. His pictures shown at exhibitions of the Medical Art Society will be remembered for their individuality, and he was an expert in cabinet-making.

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The title of reader in medicine has been conferred on Dr. K. W. Donald, and of reader in surgery on Mr. B. N. Brooke. Dr. M. B. Conran has been appointed lecturer in bacteriology, and Dr. K. Aterman lecturer in biophysics. The following clinical lecturers have been appointed:

Obstetrics.—Dr. Jean Hallum, Dr. G. S. Lester, Dr. L. M. Park.
Radiology.—Dr. J. C. Bishop, Mr. W. H. Bond, Dr. O. E. Smith.
Dental Surgery.—Dr. R. F. Pusey, B.D.S.

Mr. J. A. Stallworthy has been appointed Ingleby lecturer for 1951. Prof. Edward D. Churchill, chief of the general surgical services, Massachusetts General Hospital, Boston, will take part in the surgical work of the teaching hospitals during the spring term.

On Nov. 21 a hostel, which will accommodate 12 students while they are doing their midwifery training, was opened at Dudley Road Hospital. It is to be called the Hilda Lloyd Hostel.

Scottish Conjoint Board

At recent examinations for licentiateship of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow the following were successful:

W. St. C. Bauld, T. L. Bowden, Wilfred Brabbin, Louis Brinberg, J. P. Capel, Semon Caplan, J. T. Davidson, J. W. Davison, Donald Duck, Ruth M. Eaton, R. Y. Forbes, Isabel M. Forster, Marshall Frieze, K. M. Graham, J. G. Green, A. I. Hutchinson, J. L. W. Johnson, Anna M. M. Lepper, Veronica R. E. Lethbridge, T. J. McCabe, R. H. G. McKay, I. T. McLachlan, A. M. Muir, Denis Murray, P. A. O'Brien, Arthur Pollok, Anne McK. Rodger, Bertram Schulberg, Hareebrun Bunsee Singh, P. I. Sless, B. D'A. Smith, Leslie Steen, I. S. Trotter, E. G. C. Valerio.

McGill University

Dr. Eric Wittkower has been appointed assistant professor of psychiatry. He will take up his appointment in Montreal next March.

University of London

At recent examinations the following were successful:

M.B., B.S.—David Burman, M. W. Cemlyn-Jones, P. J. Chapman, S. S. Epstein, D. I. Fryer, L. G. Goodwin, P. E. B. Holmes, C. B. Ingor-Willey, R. P. V. Jayewardene, R. S. Jelliffe, *D. J. Jenden, Neil MacDonald, F. W. O'Grady, T. H. Roffe, M. K. Sawday, Geoffrey Walker (with honours); R. G. Adams, D. G. E. Alldridge, J. D. B. Andrews, Barnett Bass, D. A. Begg, Marion Berry, C. N. Best, Margaret E. Beynon, N. P. Bhandari, Irene F. A. Blakeney, A. G. Blyth, Elizabeth M. Bough, J. L. Bowen, Betty B. Boxall, T. L. Bradbeer, C. J. Bradfield, Yvonne J. Bradfield, R. O. Brettell, J. E. Bridger, W. V. Brooks, D. E. Brown, O. F. Brown, K. M. Bryant, N. L. Bucky, M. G. Budden, S. H. Burges, Patricia M. Bushell, R. P. Butt, Gordon Canti, R. J. A. Carey, S. J. Carne, W. I. Carter, P. J. Chesterman, J. W. Cieszynski, P. H. Cima, D. A. Clements, N. F. Cockett, R. A. Cocks, R. F. Coggins, Sheila D. Cooper, C. H. Corby, A. H. Cox, Elizabeth P. Cracroft, A. J. I. Dacre, Mary G. C. A. Dale, R. A. Davidson, Aldwyth H. Davies, J. W. Davies, W. H. G. Davies, J. G. Dawe, Geva B. P. de Winton, P. L. C. Diggory, Stanley Dische, F. B. Dobbs, Winifred B. Drew, B. H. Du Hesume, W. R. Edwards, Alison M. M. Fleming, N. S. Galbraith, O. P. Galpin, M. F. Gardiner, F. P. A. Garton, Angela M. Geere, M. J. Gilkes, Derek Goldman, A. M. Goldstein, Edwina R. Goodall, Helen Gordon, Roy Goulding, John Gower, B. P. Green, C. R. Greenacre, E. J. Griffiths, P. W. W. Griffiths, Stanley Hacking, Antoinette I. Hallett, C. P. Handforth, H. R. Hewitt, P. G. Higgins, June R. Hill, R. R. W. Hill, R. F. H. Horn, Harry Horwitz, B. J. Hovenden, J. G. Howard, St. C. M. L'A. Hubbard, E. R. Huehns, F. T. Hunt, Sylvia R. Ingold, Diana H. Ireland-Jones, M. C. H. Jackson, Elsie S. Jaikaran, Brenda James, G. C. Jenkins, F. G. Johnson, M. H. F. Johnson, D. R. Jones, R. J. B. H. Jones, Ann Kiln, A. E. Kingston, G. W. Korn, E. B. Kraus, A. C. K. Lawrence, D. A. Lawrence, J. J. Lesser, Shinmen Liu, J. W. McCloy, D. H. McFerren, K. A. McNeill, I. J. MacQueen, G. W. Marsh, Nancy A. H. Marston, J. A. M. Martin, Michael Mason, Jennie C. Maurice-Jones, A. R. May, Arnold Melinek, A. L. Miller, John Minnis, Cornelius Molloy, David Montague Jackson, Margaret C. R. Moore, Doreen P. Morgan, P. D. Moyes, A. R. Moynahan, D. J. F. Munro, R. W. Nash, B. E. C. Nordin, S. F. Oakenfull, K. J. O'Connor, A. L. C. Packham, H. J. G. Palmer, Kathleen M. Parker, Mary Parsons, J. K. Paterson, Dina Patuck, D. L. Pedersen, R. D. Peduzzi, J. R. P. Pegg, H. F. Pile, J. D. Pollitt, W. E. B. Preston, C. F. G. Prideaux, K. G. Prior, Rebe S. Rainsbury, J. H. Reading, Doreen M. Reside, Mary Rhoderick, G. A. Roberts, Margaret E. Robson, Israel Rocker, E. H. Roffey, J. K. Ross, P. W. Ruggles, R. H. B. Sacks, Barbara J. Salisbury, J. F. Santer, J. N. McM. Schofield, John Scorey, W. C. Scott, D. I. Segall, S. A. Seligman, S. J. G. Semple, Pauline M. Seymour-Cole, I. M. Sharpe, E. M. Shipsey, Isabel G. Smith, D. P. Smyly, R. S. Somers, Theodore Spiro, Vivian Stanhill, Charles Steer, F. P. Stephens, P. B. Stewart, K. H. Stone, L. R. Sweetman, P. K. Sylvester, Gwendolyn R. Tapp, P. K. Thomas, D. J. G. Tilley, W. L. Timmins, J. A. Tottle, A. F. Tuohy, C. L. Tutty, Lilian S. Underhill, John Vaccaro, Raymond Vickers, M. H. Vickery, F. H. Walker, I. H. Wallington, A. V. Watts, T. P. S. Watts, D. M. Webster, R. H. C. Wells, Mary F. West, E. J. Williams, J. L. Williams, F. P. Willis, M. L. N. Willoughby, M. A. Wilson, Hellmuth Windschauer, Maurice Wise, M. E. Y. York-Moore, J. P. W. Young, T. M. Young.

* University medal.

Royal Institute of Public Health and Hygiene

On Monday, Tuesday, and Wednesday, Dec. 11, 12, and 13, at 4.30 P.M., at 28, Portland Place, London, W.1, Sir Leonard Parsons, F.R.S., will deliver the Harben lectures, entitled Studies on Child Health.

International Course on Child Psychiatry

On Nov. 12 some 30 psychiatrists, pædiatricians, and social workers from 19 countries in Europe, the Middle East, and Latin America began a course on this subject in London. Their programme was arranged by the British Council, with Dr. Kenneth Soddy and Dr. Emanuel Miller as advisers, and it forms part of a course arranged by the Centre International de l'Enfance, the first part of which was held in Paris.

British Congress of Obstetrics and Gynæcology

At this congress, which is to be held at Leeds from July 8 to 11, 1952, the following subjects have been chosen for discussion: abnormal uterine action in labour, stress incontinence of urine, the place of the pædiatrician in a maternity unit, and genital tuberculosis in the female. The secretary of the congress is Mr. B. L. Jeaffreson, 32, Park Square, Leeds, 1.

Faculty of Ophthalmologists

At a meeting of the council on Oct. 13, it was reported that the following committee had been recognised by the Minister of Health to deal with future admissions to the Central Professional Committee's list of ophthalmic medical practitioners: The Hon. G. J. O. Bridgeman, Mr. Nigel Cridland, Mr. N. P. R. Galloway, Mr. J. J. Healy, Mr. H. B. Ingram, and Mr. E. G. Mackie. It was agreed to ask the faculty's representatives to propose that no ophthalmic medical practitioner should be admitted to the list unless he held a contract with a hospital, from S.H.M.O. grade upwards, and that if he relinquished his post he should cease to be included on the list.

Association of Clinical Pathologists

The next meeting of this association will be held on Jan. 25, 26, and 27, 1951, at the Westminster Hospital, London.

Royal Society of Arts

On Wednesday, Nov. 29, at 2.30 P.M., Lord Horder will give a lecture to this society at their house in John Adam Street, London, W.C.2, on Cities without Noise.

Modern Methods of Diagnosis and Treatment

A series of postgraduate lectures with this general title is to be given at the hall of the Society of Apothecaries from Dec. 4 to 8. Further particulars will be found in our advertisement columns.

Christian Medical Fellowship

On Tuesday, Nov. 28, at 8.15 P.M., at the house of the Royal Empire Society, Craven Street, London, W.C.2, Mr. H. J. Seddon will speak on the Christian Heritage in Medicine.

Aberdeen University Club in London

This club is holding a dinner and dance on Thursday, Dec. 14, at the Hyde Park Hotel, Knightsbridge, S.W.1, at 7.30 P.M. Tickets (25*s*.) may be had from Dr. Henderson, the secretary of the club, Southern Hospital, Dartford, Kent, before Dec. 11.

Ciba Foundation Lecture

Sir Stanton Hicks, professor of human physiology and pharmacology in the University of Adelaide, will deliver a lecture at the foundation, 41, Portland Place, London, W.1, on Tuesday, Dec. 12, at 5 P.M. He is to speak on the Rôle of Suprarenal Cortical Function in Disorders of Childhood.

Accidents in the Home

This subject will be discussed at a meeting to be held in the Town Hall, Salford, at 2.30 P.M., on Wednesday, Nov 29. The opening speakers are to be Dr. C. A. Boucher, of the Ministry of Health, London, and Mrs. Winifred Duncan, home safety department of the Royal Society for the Prevention of Accidents, London.

Manx Crisis

According to press reports, the 34 Manx chemists who, as we reported last week, have withdrawn from the health service have intimated their willingness to resume work at once if the Health Service Board will give them three months' notice, from Oct. 1, of its intention to impose a charge on prescriptions and containers.

Christmas Seals

The Canadian Tuberculosis Association have given the National Association for the Prevention of Tuberculosis 50 million seals to sell in aid of their funds. The seals cost 4*s*. for 100 and may be obtained from the N.A.P.T., Tavistock House North, London, W.C.1. Christmas cards (6*d*. each) and whist score-cards (10*s*. per 100) are also for sale.

"Closed Shop" in Durham

As mentioned in our parliamentary columns, Durham County Council has decided to dismiss any of its employees who do not belong to a trade union or professional association. The 50-odd doctors who are involved are reported to have decided to ignore this ruling, which is to be discussed again at a special meeting of the council on Nov. 28.

Scientists Talking

Sir Leonard Parsons, F.R.S., Prof. A. P. Thomson, and Prof. S. Zuckerman, F.R.S., are to be among the members of the new Lunar Society of the Air whose unscripted after-dinner conversation on subjects of "public interest and real scientific significance" is to be broadcast on the Midland region of the B.B.C. (276 m.). The original Lunar Society, which met in Birmingham in the 18th century, included Dr. Erasmus Darwin amongst its members. The first meeting of the new series will be broadcast this evening, Nov. 24, at 10 P.M., when the Effects of Medical Progress will be the subject of the discussion. Later subjects will include Pressure of Population on World Resources, Telepathy, and the Future Evolution of Man.

On Nov. 15, Sir James Learmonth was invested with the insignia of a chevalier of the League of Honour.

Appointments

ARMITAGE, RUTH, M.B. Lond.: anæsthetic registrar, East Suffolk and Ipswich Hospital.
HAWKINS, C. F., M.D. Lond., M.R.C.P., D.A.: asst. physician, United Birmingham Hospitals.
HAYWARD, J. B. W., M.B. Birm.: medical director i.c. mass radiography unit, Gloucester.
JONES, E. M., M.B. Lpool, D.P.H.: asst. county M.O. and district M.O.H., Herts.
RANGER, DOUGLAS, M.B. Lond., F.R.C.S.: consultant asst. ear, nose, and throat surgeon, Middlesex Hospital, London.
WILSON, B. D. R., M.B. Lond., M.R.C.P., D.C.H.: consultant pædiatrician, St. Andrew's Hospital, London.
YOUNG, I. S., M.B. Glasg., F.R.C.S.E., D.L.O.: consultant ear, nose, and throat surgeon, Norwich area.

Colonial Service:

CARLONI, E., M.D.: M.O., Tanganyika.
GILLIES, M. T., M.B. Camb.: medical research officer, grade III (medical entomologist), East Africa malaria unit of East Africa High Commission.
GRAHAM-CUMMING, GEORGE, M.B. Edin., D.P.H., D.T.M.: senior health officer, Hong Kong.
GRIFFITH, G. V. A., M.D. Dubl.: senior M.O., Hong Kong.
HUDD, H. R., M.D. Wales, D.A.: specialist (anæsthetist), Uganda.
KLIMCZYNSKI, J. J. J. T., M.D. Polish School of Medicine: asst. medical superintendent (temporary), Mental Hospital, Barbados.
MCDONALD, J. A., M.B.: M.O., Uganda.
VAIZEY, J. M., M.A., M.D. Camb., M.R.C.P., D.T.M. & H.: M.O., Uganda.

Diary of the Week

NOV. 26 TO DEC. 2

Monday, 27th

INSTITUTE OF OPHTHALMOLOGY, Judd Street, W.C.1
5.30 P.M. Mr. B. W. Rycroft: External Rhinostomies.
MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Dr. H. L. Marriott, Dr. N. R. Lawrie: Maintenance of Fluid Balance.

Tuesday, 28th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1.) Prof. C. Rimington: Blood and Bile Pigments.
INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5 P.M. Dr. J. O. Oliver: Pathology.
INSTITUTE OF UROLOGY, St. Paul's Hospital, Henrietta Street, W.C.2
11 A.M. Dr. W. N. Mascall: V.D. in relation to Pregnancy.
EDINBURGH POST-GRADUATE BOARD FOR MEDICINE
5 P.M. (Edinburgh University Anatomy Theatre.) Prof. Crighton Bramwell: The Normal Heart.

Wednesday, 29th

INSTITUTE OF DERMATOLOGY
5 P.M. Dr. R. W. Riddell: Medical Mycology.
INSTITUTE OF OPHTHALMOLOGY
5.30 P.M. Mr. H. Ridley: Recent Advances in Ocular Therapeutics.
INSTITUTE OF UROLOGY
11 A.M. Dr. A. H. Harkness: Urethritis of Non-venereal Origin.
NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.15
8.15 P.M. Dr. C. A. Birch: Some Medical Accidents.
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow.
5 P.M. Prof. Ian Aird: Lymphœdema. (John Burns lecture.)

Thursday, 30th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5.30 P.M. Prof. G. Grey Turner: Simple Stricture of the Œsophagus.
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Prof. G. W. Pickering: Mechanism of Hypertension.
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. B. Russell: Diseases Caused or Aggravated by Light.
INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, S.E.5
3 P.M. Prof. A. Meyer: The Frontal Lobe.
INSTITUTE OF UROLOGY
11 A.M. Dr. R. Lees: Sociological Problems of V.D.
ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.1
4.30 P.M. Dr. Anthony Feiling: Neurology lecture-demonstration.
HONYMAN GILLESPIE LECTURE
5 P.M. (Edinburgh University, Anatomy Theatre.) Dr. C. M. Seward: Colonic Pain and the Colon Neurosis.
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Mr. R. Marcus: Tracer and Therapeutic Studies with Radio-isotopes.

Friday, 1st

MAIDA VALE HOSPITAL MEDICAL SCHOOL, Maida Vale, W.9
5 P.M. Dr. Douglas McAlpine: Clinical neurological demonstration.
INSTITUTE OF OPHTHALMOLOGY
5.30 P.M. Dr. Helen Dimsdale: Ophthalmological Manifestations of Cerebral Atrophy.

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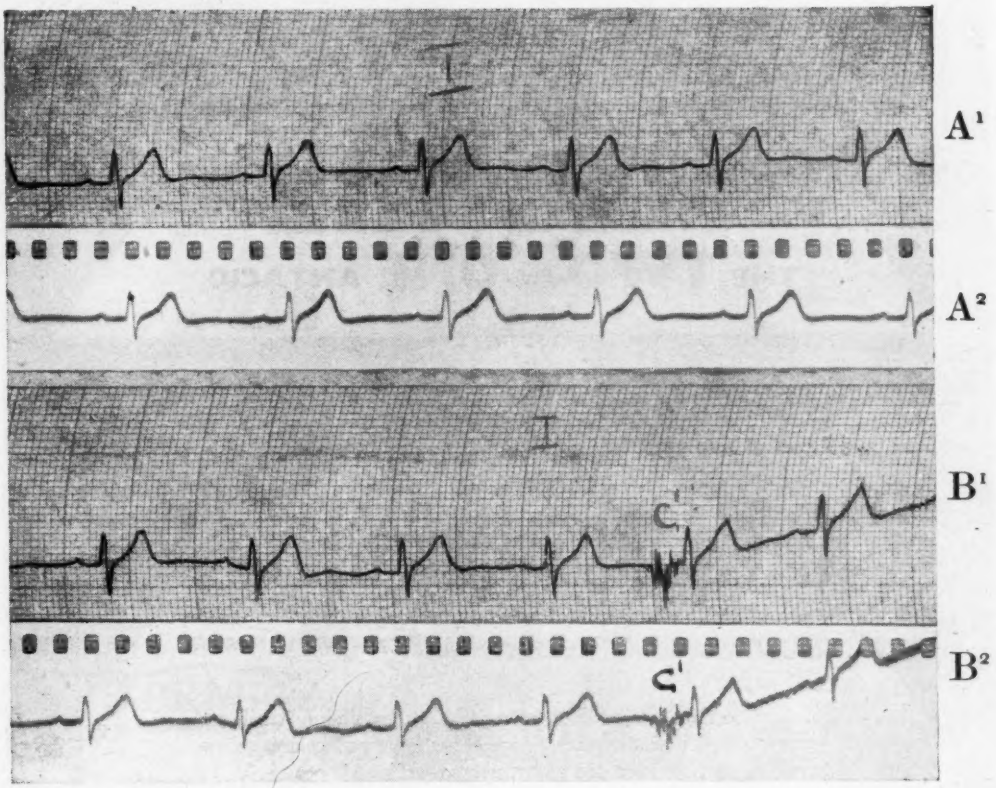

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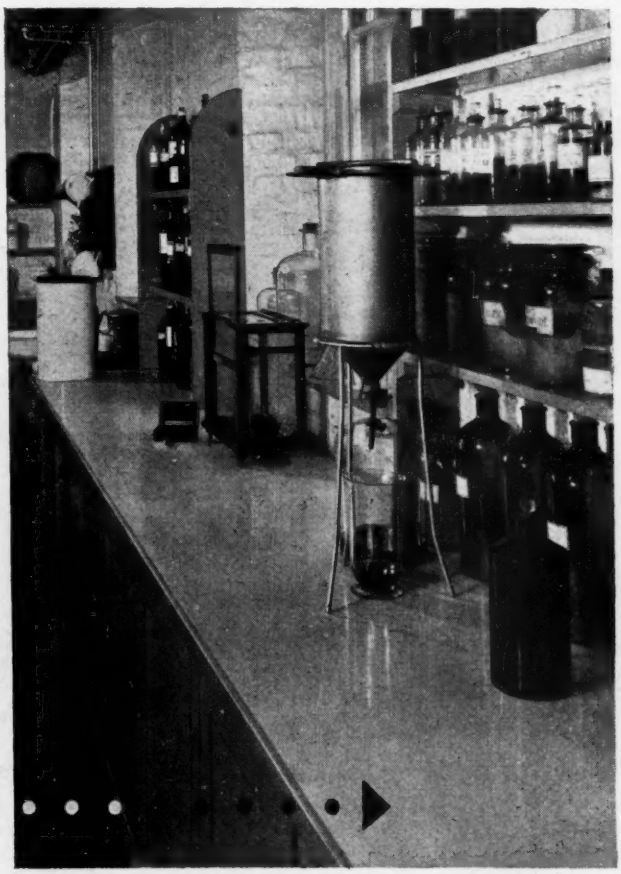

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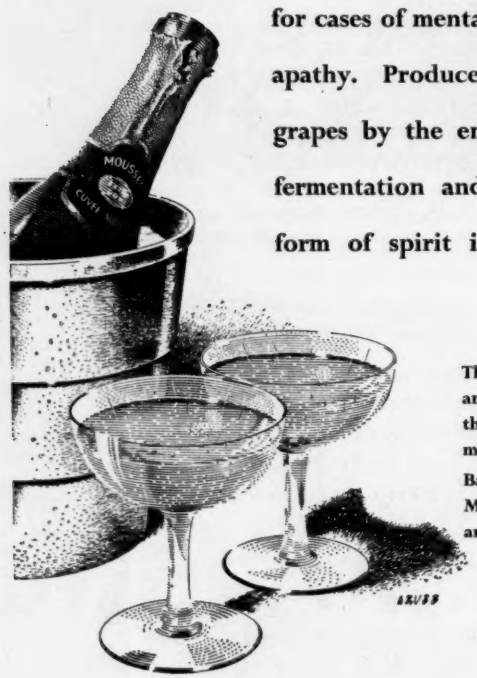

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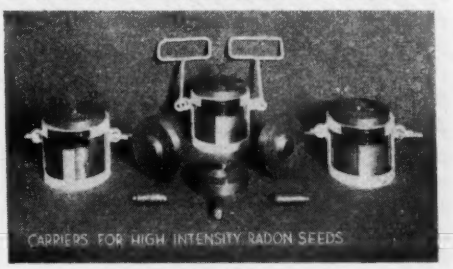

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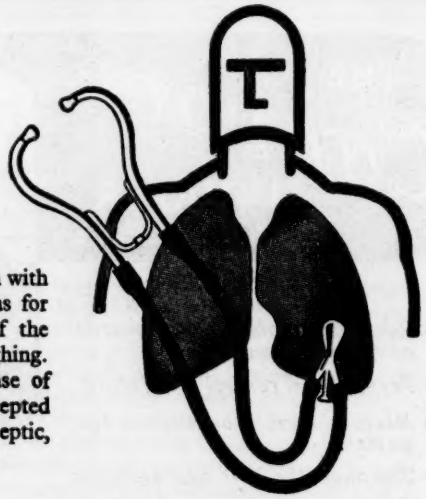

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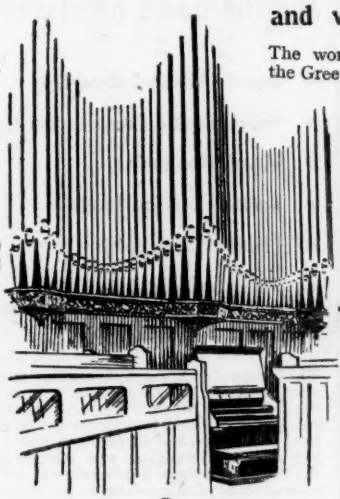

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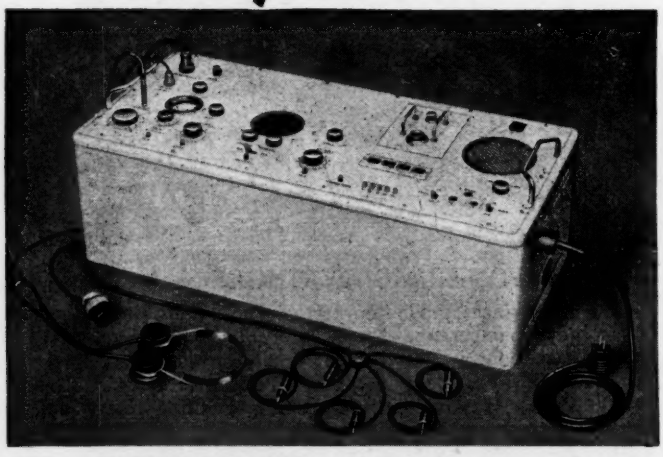

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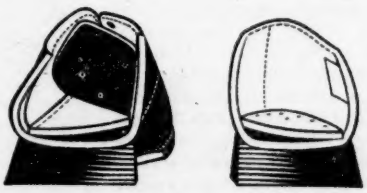

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Dr. H. PULLAR-STRECKER Dr. G. W. SMITH, O.B.E.

UNIVERSITY EXAMINATION POSTAL INSTITUTION

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

For Prospectus and list of tutors apply to Dr. G. E. OATES, University Examination Postal Institution, 17, Red Lion-square, London, W.C.1 (Phone HOLborn 6313).

Academic and Educational

EXAMINING BOARD IN ENGLAND

by the
ROYAL COLLEGE OF PHYSICIANS OF LONDON
and the
ROYAL COLLEGE OF SURGEONS OF ENGLAND

Notice is hereby given that the following Examination will commence on the date stated below :—

DIPLOMA IN PUBLIC HEALTH
Friday, 29th December

Candidates who have fulfilled the necessary conditions and who desire to present themselves for examination must give notice in writing to the Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least 21 days before the date of the Examination, transmitting at the same time such certificates as may be required by the regulations of the Board, together with the amount of the fee due. Applications for the Final are due at the same time as for the Preliminary.

F. M. STENT, Secretary.

UNIVERSITY OF LONDON

A Lecture on "THE CYTOARCHITECTONIC ORGANISATION OF THE SPINAL CORD" will be delivered by Prof. BROR REXED (Stockholm) at 5.30 P.M. on 6TH DECEMBER at University College (Anatomy Theatre), Gower-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
(Incorporating the teaching facilities of Queen Charlotte's Maternity Hospital, Chelsea Hospital for Women and the Department of Obstetrics and Gynæcology of the Postgraduate Medical School of London.)

Applications for enrolment of graduates with a registrable qualification are invited for the SPRING TERM which begins on 8TH JANUARY. Graduates are allotted to one of the constituent hospitals and combined classes are held at each of the 3 hospitals on 1 day a week. Enrolment fee £3. Tuition fee £20 for 1 term, £35 for 2 terms.

General practitioners wishing further experience in obstetrics may be accepted at Queen Charlotte's Hospital to attend the practice of the Hospital for 2 or 4 weeks. They will be allowed to do normal deliveries and may attend the combined classes. Fee £3 a week during term time.

During vacation graduates may attend the practice of the hospital at the Postgraduate Medical School and Queen Charlotte's Hospital. Fee £1 per week.

Limited hostel accommodation is available at the Postgraduate Medical School and close to Queen Charlotte's Hospital.

Further particulars from the Secretary, Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, S.W.3.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

A 3-months' course of Postgraduate Surgery is arranged to start on 26TH MARCH, 1951. It is suitable for surgeons requiring a refresher course in the current outlook on general surgery, or for graduates preparing to specialise in surgery ; approximately 275 hours of instruction are provided. A similar course will be held starting on 1st October, 1951. Fee £31 10s.

INTERNAL MEDICINE

A course lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begins on 2ND APRIL, 1951. These courses consist of 320 hours' instruction, comprising lectures, clinical demonstrations, and ward visits. A similar course begins on 1st October, 1951. Fee £31 10s.

Additional instruction in Clinical Pædiatrics is arranged in conjunction with the course in medicine, for which there is a small fee ; the numbers are limited.

MEDICAL SCIENCES

A 3 months' course in Applied Anatomy, Physiology, Pathology, Bacteriology, and Biochemistry will begin on 2ND JULY, 1951. This course is suitable for postgraduates wishing to take the Primary Fellowship examination, as a final preparation in these subjects. Considerable basic knowledge is highly desirable prior to taking this course. Fee £31 10s.

Applications for enrolment to Director of Postgraduate Studies, Surgeons' Hall, Edinburgh, 8. Applicants for courses should supply particulars of qualifications and postgraduate experience.

WORLD HEALTH ORGANISATION FELLOWSHIPS

A small number of Fellowships is to be awarded in 1951 by the World Health Organisation to registered medical practitioners, dental practitioners, and State-registered nurses of at least 5 years' standing who are engaged in the Health Services, Medical Education, or Medical Research in the United Kingdom. Fellowships will be of 2 kinds :—

(1) Resident Fellowships for a period which exceptionally might be extended to 1 year.
(2) Travelling Fellowships of short duration for senior persons holding responsible appointments.

Applications, giving full particulars of qualifications, experience, proposed programme and duration of study, and accompanied by names of 2 referees, should be sent—

(*a*) By those resident in Scotland to the Secretary, Department of Health for Scotland, St. Andrew's House, Edinburgh, 1.
(*b*) By others to the Secretary, Ministry of Health, Whitehall, S.W.1.

Envelopes should be marked "World Health Organisation Fellowships" and be received not later than 11th December, 1950.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 4TH DECEMBER, 1950. The following Examination will be held in May, 1951.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

SOCIETY OF APOTHECARIES OF LONDON

LECTURES

A course of 10 Postgraduate Lectures on MODERN METHODS OF DIAGNOSIS AND TREATMENT will be delivered in the Hall, Black Friars-lane, Queen Victoria-street, E.C.4, at 3.30 and 5 P.M., as follows :—

Date	*Time*	*Subject*	*Lecturer*
Dec. 4,	3.30 P.M.	The Theoretical Aspects of Isotopes in relation to Medicine	Prof. A. W. WORMALL, D.SC.
	5 P.M.	Practical Aspects of Isotopes in relation to Medicine	Prof. J. S. MITCHELL, PH.D., M.B., B.CHIR.
Dec. 5,	3.30 P.M.	Biochemical Considerations of the Suprarenal Gland and its relationship to Medical Therapy, with special reference to Rheumatoid Arthritis	Prof. E. C. DODDS, M.V.O., M.D., F.R.S.
	5 P.M.	The Use of Steroid Hormones in Rheumatoid Arthritis	Dr. W. S. C. COPEMAN O.B.E., F.R.C.P.
Dec. 6,	3.30 P.M.	The Theoretical Aspects of the Investigation of Renal Diseases	Prof. E. J. KING, PH.D., D.SC.
	5 P.M.	Some Aspects of Treatment in Renal Disease	Prof. MAX ROSENHEIM, M.D., F.R.C.P.
Dec. 7,	3.30 P.M.	The Medical Aspects of Peripheral Vascular Disease	Sir HORACE EVANS, K.C.V.O., M.D., F.R.C.P.
	5 P.M.	The Surgery of Peripheral Arterial Disease	Sir JAMES PATERSON ROSS, K.C.V.O., M.S., F.R.C.S.
Dec. 8,	3.30 and 5 P.M.	Thyroid and Parathyroid Diseases	Sir HENRY COHEN, M.D., F.R.C.P.

Fees for the full course £2 2s. ; for any 2 lectures on the same afternoon 10s. ; single lecture 7s. 6d.

ERNEST BUSBY, Registrar.

Apothecaries' Hall, Black Friars-lane, E.C.4, November, 1950.

TUBERCULOSIS EDUCATIONAL INSTITUTE

Market Drayton, Salop. A 3-day CLINICAL COURSE will be held at the Cheshire Joint Sanatorium, Market Drayton, on 13th, 14th, and 15th December. Fee £3 3s.

Applications for further information and for enrolment should be addressed to the Secretary, Tuberculosis Educational Institute, Tavistock House North, Tavistock-square, London, W.C.1.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

(Incorporating the teaching facilities of Queen Charlotte's Maternity Hospital, Chelsea Hospital for Women, and the Department of Obstetrics and Gynæcology at the Postgraduate Medical School at Hammersmith Hospital.)

A few vacancies exist in the SPRING TERM COURSE, 8TH JANUARY–10TH MARCH. Immediate application should be made to the Secretary, the Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, London, S.W.3.

THE CHRISTIAN MEDICAL FELLOWSHIP. Royal Empire Society (Craven-street entrance), 28TH NOVEMBER, 8.15 P.M. "THE CHRISTIAN HERITAGE IN MEDICINE," Mr. H. J. SEDDON, Chairman : Sir James Paterson Ross.

GUY'S HOSPITAL MEDICAL SCHOOL, S.E.1. Applications invited for appointment of ASSISTANT to the Director of the Department of Pædiatrics. Appointment is for 2 years in the first instance, to commence as soon as possible. Applicants should hold the M.D. or M.R.C.P. Salary £1250–£1750 p.a., with superannuation and family allowance.

Copies of standing orders are obtainable from the Dean, to whom applications should be forwarded by 12th December, 1950.

INSTITUTE OF CARDIOLOGY, National Heart Hospital, Westmoreland-street, London, W.1. Applications invited for post of ASSISTANT DIRECTOR (full-time) at a salary corresponding to that of Reader (£1500, rising by annual increments of £100 to a maximum of £2000), with superannuation under the F.S.S.U. together with family allowances. Duties will consist of research, teaching, charge of beds and control of an outpatient clinic. Appointment normally held for 3 years subject to annual renewal.

Applications, together with names of 3 referees, should be forwarded to the Dean by 8th December, 1950.

UNIVERSITY OF OXFORD. Applications invited for post of FIRST ASSISTANT (full-time) in the Nuffield Department of Obstetrics and Gynæcology, University of Oxford. Duties are mainly clinical but include teaching ; there is good opportunity for research. Applicants must have had wide clinical experience and hold the M.R.C.O.G. qualification. Salary is in the range £1500–£2000, according to experience.

Applications, addressed to the Secretary, Nuffield Department of Obstetrics and Gynæcology, Radcliffe Infirmary, Oxford, must be received before 18th December.

INSTITUTE OF ORTHOPÆDICS

COURSE IN
ANATOMY, PHYSIOLOGY AND PATHOLOGY OF JOINTS
15TH–23RD JANUARY, 1951

Monday, 15th January, Great Portland-street

10.00 A.M. — Anatomical and Physiological Principles — Prof. D. V. DAVIES
11.45 A.M. — Chemistry of Synovial Fluid — Dr. T. F. DIXON
12.45 P.M. — Lunch
1.45 P.M. — General Pathology of Joint Structures — Dr. H. A. SISSONS
4.00 P.M. — Tea
4.30 P.M. — Anatomy of Pectoral Girdle — Dr. J. JOSEPH

Tuesday, 16th January, Country Branch, Stanmore

10.30 A.M. — Congenital Dislocation of Joints — Mr. H. J. SEDDON, Mr. D. TREVOR
12.45 P.M. — Lunch
1.45 P.M. — Infection of Joints — Dr. C. H. LACK, Mr. G. BLUNDELL JONES
4.00 P.M. — Tea

Wednesday, 17th January, Great Portland-street

10.00 A.M. — The Shoulder Capsule — Mr. V. H. ELLIS
11.15 A.M. — Recurrent Dislocation of the Shoulder — Mr. V. H. ELLIS
12.45 P.M. — Lunch
1.45 P.M. — Clinical Demonstration — Mr. H. J. SEDDON
4.00 P.M. — Tea
4.30 P.M. — Anatomy and Function of the Hip — Dr. J. JOSEPH

Thursday, 18th January, Country Branch, Stanmore

10.00 A.M. — Clinical Demonstration — Mr. J. A. CHOLMELEY
12.45 P.M. — Lunch
1.45 P.M. — Coxa Vara — Mr. K. I. NISSEN
4.00 P.M. — Tea

Friday, 19th January, Country Branch, Stanmore

10.00 A.M. — Tuberculosis Symposium — Mr. H. J. SEDDON
12.45 P.M. — Lunch — Mr. J. A. CHOLMELEY
1.45 P.M. — Tuberculosis Symposium (cont.) — Dr. F. H. STEVENSON, Dr. C. H. LACK, Dr. H. A. SISSONS
4.00 P.M. — Tea

Saturday, 20th January, Great Portland-street

10.00 A.M. — Anatomy of the Knee — Dr. J. JOSEPH
11.00 A.M. — Neuropathic Joints — Mr. A. T. FRIPP

Monday, 22nd January, Great Portland-street

10.00 A.M. — Movements of Joints — Dr. J. JOSEPH
11.15 A.M. — Ankylosis — Mr. R. Y. PATON
12.45 P.M. — Lunch
1.45 P.M. — Osteo-arthritis — Dr. H. A. SISSONS
3.00 P.M. — Mechanical Derangement of Joints — Mr. J. I. P. JAMES
4.00 P.M. — Tea
5.00 P.M. — Pain referred from Joints — Dr. P. H. SANDIFER

Tuesday, 23rd January, Great Portland-street

10.00 A.M. — Rh.A. (Pathology) — Dr. H. A. SISSONS
11.00 A.M. — Rh.A. and Gout — Dr. R. NASSIM
12.45 P.M. — Lunch
1.30 P.M. — Surgical Anatomy of the Spine and Weight Transmission — Dr. J. JOSEPH, Mr. J. I. P. JAMES, Mr. P. H. NEWMAN
4.00 P.M. — Tea
5.00 P.M. — Ankylosing Spondylitis — Prof. B. W. WINDEYER

The fee for the course, including lunch and tea, is 10 guineas. Early application should be made to the Dean at 234, Great Portland-street, London, W.1.

UNIVERSITY OF EDINBURGH. Department of Surgery. Applications invited for post of LECTURER IN SURGERY for Dental Students. The Lecturer will be responsible for the instruction of dental students in both systematic and clinical surgery. He will be a member of the staff of the Department of Surgery and will have the facilities of the department at his disposal. In addition he will be given an appointment with the grading of Senior Registrar in the Unit of the Professor of Clinical Surgery in the Royal Infirmary. Salary in range £1000–£1300 p.a., according to age, experience, and qualifications, with provision for superannuation. Successful applicant required to take up duty 1st January, 1951.

Applications, with names of 2 referees, should be submitted to the Secretary to the University by 15th December, 1950, from whom the regulations governing the appointment of Lecturers in the University, and any further particulars desired, may be obtained.

THE UNIVERSITY OF LEEDS. Department of Preventive MEDICINE AND PUBLIC HEALTH. Applications invited for full-time post of SENIOR LECTURER or LECTURER in Preventive Medicine and Public Health. Candidates should have practical experience in public health and have special knowledge of, or experience in, one of the branches of preventive medicine such as nutrition, industrial health, statistics, comparative public health law, applied physiology. Salary scale for Senior Lecturer £1450–£100–£1900. Salary scale for Lecturer £900–£100–£1350. Initial salary may be above minimum according to qualifications and experience.

Further information may be obtained from the Registrar, The University, Leeds, 2, to whom applications, giving full details and names of 3 referees, should be sent by 30th December, 1950.

THE UNIVERSITY OF MANCHESTER. Department OF CHILD HEALTH. Applications invited for full-time post of LECTURER IN CHILD HEALTH. Salary scale £700–£100–£1800 p.a., according to qualifications and experience. Membership of the F.S.S.U. and children's allowance scheme.

Applications should be sent by 22nd December, 1950, to the Registrar, The University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF MANCHESTER. Department of PSYCHIATRY. Applications invited for full-time post of SENIOR LECTURER IN PSYCHIATRY. Salary from £1800–£100–£2000 p.a., according to qualifications and experience. Membership of the F.S.S.U. and children's allowance scheme. Candidates should have registrable medical qualifications and also a formal training in psychiatry.

Further particulars and forms of application may be obtained from the Registrar, The University, Manchester, 13, to whom applications must be sent by 22nd December, 1950.

UNIVERSITY OF ST. ANDREWS. The University Court of the University of St. Andrews invites applications for following appointments in the Senior Medical School (Dundee) of the University of St. Andrews :—

(1) LECTURER in the Department of Bacteriology. The candidate selected must be a registered medical practitioner of specialist status. Salary payable £1500 p.a., rising by annual increments of £100 to maximum of £2000 p.a., together with F.S.S.U. benefits. The University operates a scheme of family allowances and a grant towards expenses of removal may be made.

(2) TEMPORARY LECTURER in the Department of Bacteriology. Salary payable £800 or £1100 p.a., according to the candidate's qualifications and experience.

Further particulars of both appointments may be obtained from undersigned, with whom 1 copy of the application, together with testimonials and/or names of 3 referees, should be lodged by 15th December, 1950. DAVID J. B. RITCHIE, Secretary.

The University, St. Andrews, 17th November, 1950.

UNIVERSITY OF GLASGOW. Applications invited for appointment to the GARDINER CHAIR OF BACTERIOLOGY, which will become vacant on 30th September, 1951. The Gardiner Professor is also Bacteriologist to the Glasgow Western Hospitals, which appointment carries Consultant grading. A medical qualification is essential. Salary will be on the University scale for professors in clinical departments.

Further particulars may be obtained from undersigned, with whom applications (20 copies) should be lodged by 30th January, 1951. ROBT. T. HUTCHESON, Secretary of University Court.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. OBSTETRIC AND GYNÆCOLOGY UNIT, NEWCASTLE GENERAL HOSPITAL. RESEARCH FELLOWSHIP IN SUBFERTILITY. Applications invited from suitably qualified doctors to carry out research work into the field of human infertility in above department under the supervision of the Senior Obstetrician and Gynæcologist. Salary £1000–£1300, national terms and conditions of service and subject to National Health Service (Superannuation) Regulations, 1950, will apply. A whole-time fellowship will be offered for a period of 1 year (to be extended if necessary). Successful applicant may be required to undertake a period of special training in seminology for not more than 4 weeks at another centre, probably London.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, should be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days. Canvassing will disqualify.

MEDICAL RESEARCH COUNCIL OF IRELAND. NATIONAL TUBERCULOSIS SURVEY. Applications invited for 2 posts as MEDICAL OFFICERS in the above Survey. Applicants should have had previous experience in tuberculosis work. Salary up to £950 p.a. (depending on suitability), plus travelling expenses and subsistence allowances. In the event of an applicant who is a permanent officer of a Local Authority being selected, the Medical Research Council will request that Authority to grant the officer, subject to the approval of the Minister for Health, special leave for the duration of his secondment to the Survey.

Applications, giving details of experience, qualifications, &c., should be submitted to the Secretary, National Tuberculosis Survey, "Montrose" (University College, Dublin), Stillorgan-road, Donnybrook, Dublin. Latest date for receipt of applications is 27th November, 1950.

UNIVERSITY OF HONG KONG. Applications invited for the vacant post of LECTURER IN ANATOMY. Emoluments (for a married member of the staff normally resident outside of Hong Kong or China and inclusive of allowances) £1400–£40–£1640 per year. Special academic experience in anatomy is essential, and teaching experience in histology is a desirable qualification. First-class sea passages are provided for expatriate staff.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 15th January, 1951.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOS- PITAL BOARD. NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.1. Applications invited for appointment of GYNÆCOLOGIST for 2 half-days per week. This is a general hospital of about 158 Beds. Appointee would have charge of 6 Beds. Applicants should possess a higher qualification and have had wide experience in this specialty. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1, by 2nd December, 1950. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Secretary of the Hospital.

CHARING CROSS HOSPITAL GROUP. Applications invited for appointment of Part-time CONSULTANT GENERAL SURGEON at Harrow Hospital. Attendance approximately 3 sessions per week (alternate Mondays P.M., every Tuesday A.M., alternate Tuesdays P.M., alternate Saturdays A.M.). Appointment is made in accordance with the Ministry of Health's terms and conditions of service of hospital medical and dental officers for the time being in operation, and subject to National Health Service (Superannuation) Regulations, 1950.

Candidates, who must be Fellows of the Royal College of Surgeons of England, should submit 12 copies of their application, stating age, qualifications, and experience, with names of 3 referees, to reach undersigned by first post, 10 days after appearance of this advertisement. Canvassing of members of the Board of Governors or Advisory Appointments Committee will lead to disqualification.

GEORGE J. JONES,
House Governor and Secretary to the Board.
Charing Cross Hospital, Strand, W.C.2.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. The Board of Governors invites applications for appointment of ASSISTANT PHYSICIAN (Consultant status) at the National Hospital, Queen-square. Candidates should be Members or Fellows of the Royal College of Physicians. Appointment will be part-time and successful applicant required to attend 4 half-days per week. Salary and conditions of service in accordance with Ministry of Health regulations.

Applications (35 copies), giving names of 3 referees, must be submitted by 9th December, 1950, to—

H. EWART MITCHELL, Secretary.
The National Hospital, Queen-square, W.C.1.

Provincial

BIRMINGHAM REGIONAL HOSPITAL BOARD invite applications for whole-time Consultant appointments.

(*a*) PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT, Birmingham (Mental D) group for duties Monyhull Hall (1200 Beds) and large residential special school. Successful candidate will deputise for Medical Superintendent and take full charge of number of beds. Residential accommodation available.

(*b*) PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT, Barnsley Hall Hospital, Bromsgrove (740 Beds), and for work in group psychiatric clinics.

Applicants must possess D.P.M. and wide experience in specialty. Appointments in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 11th December, 1950. Canvassing will disqualify. Candidates may visit group hospitals. Applicants for both appointments should forward 25 copies of applications.

LEEDS REGIONAL HOSPITAL BOARD invites applications for following whole-time appointments :—

(*a*) CONSULTANT PSYCHIATRIST for duties mainly connected with the Psychiatric Department at St. James's Hospital, Leeds. The Outpatient Department at this General Hospital is in process of extension and successful candidate will devote a large proportion of his time to this work. Inpatient work will also be undertaken in the general wards of the Hospital and in the Psychiatric Unit, in which beds are allocated for teaching. Services may be required at other Mental Hospitals in the Region.

(*b*) CONSULTANT PSYCHIATRIST for duties at Stanley Royd (Mental) Hospital, Wakefield. All modern forms of treatment are in practice in the Hospital. Successful candidate will be given clinical charge of beds and will be required to undertake extramural clinical duties.

Candidates should have had extensive experience and should hold high qualifications in medicine and psychiatry. Appointments subject to National Health Service (Superannuation) Regulations, 1950, and remuneration in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, with names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, by 16th December, 1950. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LIVERPOOL REGIONAL HOSPITAL BOARD invite applications for post of Whole-time PSYCHIATRIST (non-resident) to Rainhill Hospital. Applicants should possess the D.P.M. and have reasonable experience in psychiatry, including practical knowledge of outpatient work. Appointee required to reside within reasonable distance of Hospital ; there is a possibility of a house being made available at a rent to be decided. Successful candidate will work under the supervision of a Consultant and his duties will include attendance at other outpatient clinics in the Region. Salary £1300–£50–£1750.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to whom they should be returned by 9th December, 1950.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD invite applications for post of Whole-time ASSISTANT RADIOTHERAPIST, to work under the Director of Radiotherapeutic Services at the Radium Institute, Liverpool, 7, from whom any further information may be obtained. Applicants must possess a Diploma in Radiology and have had previous experience in radiotherapy. Salary within scale £1300 (at age 32)–£50–£1750.

Forms of application may be obtained from, and should be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received by 9th December, 1950.

VINCENT COLLINGE, Secretary to the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of CONSULTANT ANÆSTHETIST at Salford Royal Hospital, Royal Manchester Children's Hospital, Pendlebury, Hope Hospital, Salford, and Ladywell Hospital, Salford. Appointment will be either whole-time or for a minimum of 9 notional half-days per week, and appointee will be required to live within a reasonable distance of the Salford Hospitals. Salary £1700–£2750 whole-time ; part-time pro rata. The national terms and conditions of service will apply and the post is superannuable. Candidates must be of high professional standing with wide experience of anæsthesia and should possess a higher degree or diploma.

Application forms can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications from practitioners aged 32 years or over for the whole-time, non-resident posts of ASSISTANT RADIOLOGIST to hospitals in :—

(*a*) The Wigan and Leigh Area.
(*b*) Blackburn and District Hospitals.

Applicants should possess the D.M.R.(D.) and have wide experience in radiology. Successful candidates will work under the supervision of a Consultant and be required to live within a reasonable distance of the main hospitals. Salary £1300 (at age 32)–£50–£1750. National terms and conditions of service applicable and the posts superannuable. Applicants for both posts should state their preference, if any.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of CONSULTANT ASSISTANT OBSTETRICIAN AND GYNÆCOLOGIST at Hope Hospital, Salford (90 maternity beds and 68 gynæcological beds). Post may be held either on a whole-time or maximum part-time basis. Salary whole-time £1700–£2750 ; part-time pro rata. The post is superannuable and the national terms and conditions of service will apply. Candidates must be of high professional standing and possess a higher qualification. Successful candidate required to live within a reasonable distance of Hope Hospital, Salford.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 11th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications invited for post of ASSISTANT PHYSICIAN to the Children's Department. Appointment is of Consultant status and duties will require not less than 6 half-day sessions each week in the wards and outpatient consultation service of the department and associated Teaching Hospitals. Appointment is in accordance with terms and conditions of service of hospital medical and dental staffs within the National Health Service and subject to provisions of National Health Service (Superannuation) Regulations, 1950.

Applications, stating age, qualifications, experience, and present appointment, and giving names and addresses of 3 referees, should be sent to undersigned within 2 weeks of the date of appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne, 1.

WELSH REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners for post of PHYSICIAN-SUPERINTENDENT to the South Wales Sanatorium, Talgarth, Breconshire (286 Beds), for male pulmonary tuberculosis cases. Applicants should have had a wide experience in tuberculosis and medical administration of hospitals. Successful candidate may be required to take part in the domiciliary service. Possession of a higher qualification is desirable. Appointment will carry full Consultant status and salary will be in accordance with the terms and conditions of hospital medical staff. A house is available for which the appropriate deduction from salary will be made.

Applications, stating date of birth, and giving a summary of qualifications and experience, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cardiff, within 14 days of appearance of this advertisement. Canvassing will disqualify.

WELSH REGIONAL HOSPITAL BOARD invite applications for appointment of a Part-time CONSULTANT ORTHOPÆDIC SURGEON to serve the Newport and East Monmouthshire, and North Monmouthshire Hospital Management Committee groups on a basis of 9 notional half-days per week. Successful candidate should possess a higher qualification. The greater part of his work will be in the North Monmouthshire Area, and he will be in charge of beds at Ebbw Vale Hospital, and at other hospitals in the groups. He will also be required to assist in the development of an Orthopædic Service in South Wales which will ultimately be linked up with the Special Centre for Orthopædics.

Applications, stating date of birth, giving a summary of qualifications, experience, and publications, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement. Canvassing will disqualify, but this does not preclude candidates from visiting hospitals in the groups.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for appointment of a Part-time ASSISTANT THORACIC SURGEON (Consultant), 5 half-days per week, to the Godalming, Milford, and Liphook (Surrey) group of sanatoria, comprising a total of 660 Beds for pulmonary tuberculosis. Applicants must possess a higher surgical qualification and have wide experience in thoracic surgery. Successful candidate required to live within reasonable distance of the sanatoria and will work under the direction of the Senior Thoracic Surgeons, duties being divided between the 3 sanatoria in the group. Appointment subject to provisions of National Health Service (Superannuation) Regulations, 1950, and in accordance with the agreed terms and conditions of service of hospital medical and dental staffs under the National Health Service.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment, and giving names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.I), South West Metropolitan Regional Hospital Board, 11a, Portland-place, London, W.1, to arrive by 9th December, 1950. Canvassing will disqualify, but applicants are not precluded from visiting the sanatoria.

SHEFFIELD REGIONAL HOSPITAL BOARD invite applications for post of Whole-time CONSULTANT CHEST PHYSICIAN to the Leicester Area. Candidates must possess a higher medical qualification with good general medical experience and special experience in the treatment of chest diseases and tuberculosis. Previous experience of chest clinic work will be a recommendation. Successful candidate required to undertake clinics in the Leicester Area and will have independent charge of 40 Beds at Markfield Sanatorium. Appointment will be the joint responsibility of the Regional Hospital Board and the Leicester County Council. Successful candidate required to reside within 10 miles of Markfield Sanatorium. Salary and conditions of service in accordance with those agreed between the Ministry of Health and the profession. Post subject to National Health Service (Superannuation) Regulations, 1950.

Application forms and full details may be obtained from the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be received by 2nd December, 1950. Canvassing will disqualify, but candidates are invited to visit the hospital and clinics stated above, by direct arrangement with the Secretary of Leicester No. 2 Hospital Management Committee, 11, Newarke-street, Leicester.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for at least 2 posts, of Consultant status, as PHYSICIAN at the Royal Victoria Hospital, Belfast. Appointees may also undertake duties at other hospitals managed by the Belfast Hospital Management Committee. The terms and conditions of appointments will be in accordance with the Authority's application of the Spens report to Northern Ireland. Posts may be on a whole-time basis or on a part-time basis involving duties remunerated at rate appropriate to 9 half-days per week. Applicants must be members of a Royal College of Physicians with wide experience in their specialty. Contributions will be payable under the Health Services superannuation scheme. It is the Authority's policy to give preference to persons who have served in war-time in H.M. Forces.

Applications should be made on a form which may be obtained from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, which must be returned to him so as to be received by 11th December, 1950. Canvassing will disqualify. Any approach to a member of the Authority by, or at the request of, a candidate for the purpose of obtaining support for his application will be treated as canvassing.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for post of CONSULTANT SURGEON to the South Tyrone Hospital (240 Beds). Appointee might also be required to undertake duties in the adjacent areas. The terms and conditions of appointment will be in accordance with the Authority's application of the Spens report to Northern Ireland. Post may be on a whole-time basis or on a part-time basis involving duties remunerated at rate appropriate to 9 half-days per week. Applicants must be Fellows of a Royal College of Surgeons with wide experience in their specialty. Contributions will be payable under the Health Services superannuation scheme. It is the Authority's policy to give preference to persons who served in war-time in H.M. Forces.

Applications should be made on a form which may be obtained from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, which must be returned to him so as to be received by 31st December, 1950. Canvassing will disqualify. Any approach to a member of the Authority by, or at the request of, a candidate for the purpose of obtaining support for his application will be treated as canvassing.

NEW ZEALAND. AUCKLAND HOSPITAL BOARD. Applications invited from those with the necessary qualifications for the statns of Junior or Senior Specialist for position of PATHOLOGIST, Board's institutions. Applicants must be qualified medical practitioners of the British Empire, and should possess a good knowledge of general pathology, including morbid anatomy and histology. Appointee shall be registered in New Zealand before taking up duty. Salary Junior Specialist £1100 p.a., rising to £1400 p.a. by annual increments of £50 ; Senior Specialist £1500 p.a., rising to £1750 p.a. by annual increments of £50. (The commencing salary within these scales will be in accordance with qualifications and experience in the specialty.) The amounts quoted are in New Zealand currency and are living-out rates. Living accommodation is not provided.

Conditions of appointment and forms of application may be obtained from the office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2. Applications addressed to undersigned close at the office of the Board, Kitchener-street, Auckland, New Zealand, at NOON, 8th January, 1951.

R. F. GALBRAITH, Secretary.

OXFORD. THE UNITED OXFORD HOSPITALS RADCLIFFE INFIRMARY, OXFORD. Applications invited for the whole-time post of RADIOLOGIST in the United Oxford Hospitals. Post will carry with it the status, salary, and conditions of service of a Consultant, and appointee will be required to organise the Radiological Service in the United Hospitals in addition to his clinical duties.

Applications (10 copies), with names of 3 referees, must be received by undersigned not later than 16th December, 1950. Canvassing of members of the Board of Governors or of the Advisory Appointments Committee will lead to disqualification.

A. G. E. SANCTUARY, Administrator.

OXFORD REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners for post of PSYCHIATRIST to the Warneford and Park Hospitals, Oxford, as a member of a team of Psychiatrists. Post will carry consultant status. A D.P.M. and a higher medical qualification, and a wide experience of psychiatry are essential. Facilities for research are being developed at the hospital. Post in accordance with the terms and conditions of service under the National Health Service Act, and will be whole-time or for maximum part-time at the option of successful candidate, who will be required to live in or near Oxford.

Applications (10 copies), stating date of birth, qualifications, experience, and names of 3 referees, should reach the Secretary (from whom further details may be obtained), Oxford Regional Hospital Board, 43, Banbury-road, Oxford, by 15th December, 1950. Canvassing will disqualify but applicants are invited to visit the hospitals.

Hospital Services : Junior Appointments

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—315 Beds.) CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR REGISTRAR PATHOLOGIST for duties connected with the Area Laboratory situated at above Hospital. Successful candidate will be expected, where necessary, to work in other hospitals in the group and under the supervision of the Area Pathologist. Salary £670 p.a. and conditions of service as defined by the Minister of Health. The normal period of tenure of post will be for 1 year only.

Applications, stating age, nationality, names of 3 referees, and copies of 3 testimonials, should be forwarded to the Assistant Secretary before 16th December, 1950.

CITY OF LONDON MATERNITY HOSPITAL, Hanley-road, London, N.4. Required, HOUSE SURGEON (obstetric) commencing 18th January, 1951, for 6 months. Salary £400–£450 p.a., according to experience, with a deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications with dates, with copies of 3 recent testimonials, should be sent to the Secretary, Northern Group Hospital Management Committee, Royal Northern Hospital, Holloway, London, N.7, from whom forms of application may be obtained, which should be returned by 4th December, 1950. (9035.)

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in General Medical and Neurological Department. Whole-time, non-resident appointment, under supervision of Consultant Physician, will include outpatient clinics and teaching. Appointment for 1 year, renewable for a further year.

Application form obtainable from and returnable to Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 6th December, 1950. Canvassing disqualifies.

CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE. (i) DULWICH HOSPITAL, East Dulwich-grove, S.E.22 ; (ii) ST. GILES' HOSPITAL, Camberwell, S.E.5. Applications invited for appointments as HOUSE OFFICER.

(i) General duties with some E.N.T. and Ophthalmic work.
(ii) Mainly medical duties with some E.N.T. and Ophthalmic work.

Salary £400 or £450 a year, according to experience, with deduction at rate of £100 a year in respect of residence. Appointments tenable for 6 months in first instance.

Applications, stating age, qualifications, and experience, enclosing copy testimonials, to the Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, S.E.22.

EAST HAM MEMORIAL HOSPITAL, London, E.7. Required, HOUSE SURGEON (first, second, or third post), Male or Female, for 6 months from 20th December, 1950. Appointment subject to the terms and conditions of service issued by the Ministry of Health, with salary in accordance with the number of posts previously held.

Applications, stating age, and experience, with copies of testimonials, should be sent to the Secretary, West Ham Group Hospital Management Committee, London, E.15, by 9th December, 1950.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. Applications invited from registered Women medical practitioners for post of OBSTETRIC ASSISTANT (recognised for the M.R.C.O.G.), duties to commence 1st February, 1951. Salary according to Ministry of Health scale for house officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary by 7th December, 1950.

GUY'S HOSPITAL, S.E.1. Required, Whole-time REGISTRAR to the Department of Psychological Medicine. Duties to commence 1st January, 1951, for 1 year in the first instance. Salary £775 p.a., in accordance with National Health Service terms and conditions of service.

Application forms may be obtained from the Dean, Guy's Hospital Medical School, S.E.1, to whom completed applications, with names of 3 referees, must be forwarded by 12th December, 1950.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.1. (An Associate Hospital of Guy's Hospital.) Required, HOUSE PHYSICIAN, post vacant 1st January, 1951. Duty for the first 2 months will be in the Casualty Outpatients' Department. Post tenable for 6 months. Salary £400 or £450 a year, according to experience, with a deduction at rate of £100 a year for residential emoluments.

Applications, stating age, nationality, qualifications with dates, with copies of 3 recent testimonials, should reach undersigned by the first post, 7th December, 1950.

W. H. SIDNELL, House Governor.

FINCHLEY MEMORIAL HOSPITAL, North Finchley, N.12. RESIDENT HOUSE SURGEON (first or subsequent post), required to commence 1st January, 1951. Salary and conditions of service in accordance with the terms and conditions of hospital medical and dental staffs (England and Wales).

Applications to House Governor, 1, Wellhouse-lane, Barnet, Herts.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy in January, 1951, for a Part-time SENIOR REGISTRAR to the Department of Dermatology, attending for 2 sessions per week on Tuesday and Thursday afternoons. Appointment is within the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Full particulars, with form of application, which must be returned by 4th December, 1950, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. ROYAL FREE GROUP. Required, CASUALTY OFFICER (Male or Female), resident. Salary £400 or £450 p.a., according to experience, plus £50 p.a. as a supplemental payment, post vacant 14th December, tenable for 6 months at the Main Outpatient Department, Camden Town, N.W.1.

Applications, to be made on the prescribed form, with copies of 3 recent testimonials, to be returned as soon as possible.

KENNETH A. F. MILES, House Governor.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Resident HOUSE PHYSICIAN required 1st December, 1950. Appointment for 6 months. Salary £350 or £400, according to experience, less £100 p.a. for board, lodging, &c.

Forms of application can be obtained from the Medical Superintendent at the Hospital.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Resident HOUSE SURGEON required 21st December, 1950. Appointment for 6 months. Salary £350 or £400, according to experience, less £100 p.a. for board, lodging, &c.

Forms of application can be obtained from the Medical Superintendent at the Hospital.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. Required, HOUSE SURGEON (House Officer, first, second, or third post). Salary, &c., in accordance with national scale. Tenable for 6 months.

Applications to the Secretary.

LANGTHORNE HOSPITAL. Hospital Management COMMITTEE, LEYTONSTONE GROUP. HOUSE OFFICER (first, second, or third post) required for the Geriatric Unit at above Hospital. New methods of treatment are being undertaken at this large Geriatric Unit and valuable experience may be gained. Salary and conditions of service in accordance with those decided by the Ministry of Health.

Applications, stating age, qualifications, with names of 3 referees, to the Senior Medical Officer, Langthorne Hospital, Leytonstone, London, E.11.

MEMORIAL HOSPITAL, Woolwich, S.E.18. Required, CASUALTY OFFICER. Post is resident and tenable for 6 months. Salary £400 or £450 a year, according to experience, less £100 p.a. for residential emoluments.

Applications, with copies of 2 recent testimonials, to be sent to Secretary, Woolwich Group Hospital Management Committee, Memorial Hospital, Woolwich, S.E.18.

MILE END HOSPITAL, Bancroft-road, London, E.1. (455 Beds.) HOUSE SURGEON to the Obstetric Department (House Officer 3 grade). Post recognised in obstetrics for the M.R.C.O.G. examination and vacant 22nd December, 1950.

Application forms obtainable from the Secretary, Stepney Group Hospital Management Committee, Raine-street, Wapping, E.1.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (medical). Appointment to commence 1st January, 1951. Salary £350, £400, or £450 p.a., less residential charge of £100 p.a., depending upon the number of previous posts held.

Applications, stating age, and position in regard to military service, giving names of 3 referees, should reach undersigned by 5th December, 1950. FRANK CHAMBERS, House Governor.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (surgical). Appointment to commence 1st January, 1951. Salary £350, £400, or £450 p.a., less residential charge of £100 p.a., depending upon the number of previous posts held.

Applications, stating age, and position in regard to military service, giving names of 3 referees, should reach undersigned by 5th December, 1950. FRANK CHAMBERS, House Governor.

MIDDLESEX HOSPITAL, W.1. Required, Junior Registrar at St. Luke's-Woodside Hospital, Muswell-hill. This is the Inpatient Department of Psychological Medicine of The Middlesex Hospital, and is recognised for part of the training for the D.P.M. Examination. Appointment for 1 year from 1st January, and is resident, with salary according to the terms and conditions of service.

Forms of application are obtainable from the Deputy Superintendent, The Middlesex Hospital, W.1, to whom applications should be submitted by 16th December.

MILLER GENERAL (180 Beds) AND ST. ALFEGE'S (816 Beds) HOSPITALS, Greenwich, S.E.10. (Both recognised for M.R.C.P. and F.R.C.S. examination requirements.) Required, 4 HOUSE OFFICER posts at above Hospitals (a House Surgeon and House Physician at each) for 6 months from about 1st January, 1951. Salary £350–£450 p.a., less £100 p.a. for board and lodging.

Applications, stating clearly post(s) applied for, age, experience, and qualifications, with copies of 1–3 recent testimonials, should reach the Secretary, Greenwich and Deptford Hospital Management Committee, at St. Alfege's Hospital, Greenwich, S.E.10, as soon as possible.

NATIONAL HOSPITAL FOR NERVOUS DISEASES, Queen-square, W.C.1. Required, REGISTRAR (non-resident). Post carries the grade of Senior Registrar. Previous neurological experience and higher medical qualification are desirable. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs. Appointment for 1 year in the first instance. Candidates should state whether they would be prepared to accept the alternative post of Assistant Registrar, carrying the grade of Senior Registrar and similar conditions of service.

Applications, with copies of testimonials, to be sent by 9th December, 1950, to H. EWART MITCHELL, Secretary.

NATIONAL HOSPITAL FOR NERVOUS DISEASES, Queen-square, W.C.1. Required, HOUSE SURGEON. Post carries grade of Registrar. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs. Appointment for 6 months in the first instance.

Applications, with copies of testimonials, to be sent by 9th December, 1950, to H. EWART MITCHELL, Secretary.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE PHYSICIAN (mainly Children's Wards), resident, vacant 1st January, 1951. 6 months' appointment. Salary £350 p.a. for first post held, £400 p.a. for second, and £450 p.a. for third or any subsequent post, less £100 p.a. for residence. Whole-time duties such as the Medical Director may require.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials, to Secretary of Hospital, by 2nd December.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE PHYSICIAN (resident), vacant 1st January, 1951. 6 months' appointment. Salary £350 p.a. for first post held, £400 p.a. for second, and £450 p.a. for third or any subsequent post; less £100 p.a. for residence. Whole-time duties such as the Medical Director may require.

Applications, stating age, qualifications, nationality, experience, with copies of recent testimonials, to Secretary of Hospital by 2nd December.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE SURGEON (resident), fractures, orthopædic, and general emergency surgery, vacant 1st January, 1951. 6 months' appointment. Salary £350 p.a. for first post held, £400 p.a. for second post, and £450 p.a. for third or any subsequent post; less £100 p.a. for residence. Whole-time duties such as the Medical Director may require.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials, to Secretary of Hospital by 2nd December.

POSTGRADUATE MEDICAL SCHOOL OF LONDON. UNIVERSITY OF LONDON. 8 HOUSE PHYSICIANS, 4 required 1st January, and 4 1st February, 1951. R practitioners not considered.

Apply, The Dean, Postgraduate Medical School, Ducane-road, London, W.12, before 30th November, 1950.

PUTNEY HOSPITAL, Lower Common, S.W.15. Battersea AND PUTNEY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male), residential, for 6 months commencing 3rd January, 1951. Salary will be that of House Officer in the national scale.

Applications, with 3 recent testimonials, should be sent to the Administrative Officer at the Hospital by 8th December, 1950.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. Required, Whole-time REGISTRAR in the Department of Routine Bacteriology at the Bernhard Baron Memorial Research Laboratories, Queen Charlotte's Maternity Hospital, Goldhawk-road, W.6.

Applications must be lodged with undersigned by 2nd December, 1950, on forms to be obtained from—

R. S. H. THOMAS,
Secretary to the Board of Governors.
339, Goldhawk-road, London, W.6.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. Required, HOUSE SURGEON (first, second, or third post), Male or Female, for 6 months commencing 3rd January, 1951. Post recognised for F.R.C.S. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Candidates should send their applications, with copies of recent testimonials, by 9th December, 1950, to—

M. J. HUNTLEY, Secretary,
West Ham Group Hospital Management Committee.
Stratford, London, E.15.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. Required, 2 HOUSE PHYSICIANS (first, second, or third posts), Male or Female, for 6 months, 1 commencing 27th December, 1950, and 1 6th January, 1951. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Candidates should send their applications, with copies of recent testimonials, by 9th December, 1950, to—

M. J. HUNTLEY, Secretary,
West Ham Group Hospital Management Committee.
Stratford, London, E.15.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL AND THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330–332, Gray's Inn-road, London, W.C.1. There will be a vacancy for JUNIOR REGISTRAR, 1st January, 1951. Salary and conditions in accordance with the terms and conditions of service for hospital medical staff under the National Health Service Act. Registrar posts are full-time, designed to enable candidates with the necessary ability and suitable academic and surgical grounding to continue their training as Specialists. Applicants should have had good clinical experience in general surgery and in this specialty. They should preferably hold a higher surgical qualification or have passed the Primary Examination for the F.R.C.S. Appointment for an initial period of 6 months with eligibility for re-election or for promotion as the case may be.

Applications, giving full information as to qualifications and experience, with names of 2 referees, should be sent on or before 8th December, 1950.

JOHN H. YOUNG, House Governor and Secretary.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. RESIDENT HOUSE SURGEON (second and third post). Duties to commence immediately. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Applications, with copies of 3 testimonials, to be addressed to the House Governor.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Required, SENIOR REGISTRAR PATHOLOGIST. Main interest and experience should be in morbid anatomy but some experience in clinical pathology essential. Terms and conditions of service for hospital medical and dental staffs (Senior Registrar) will apply.

Applications (on a form obtainable from the House Governor), with copies of 3 recent testimonials, should be sent to the House Governor by 4th December, 1950.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Required, 2 HOUSE SURGEONS (resident and non-resident), second or third posts. Salary £400–£450 p.a., according to experience. Posts tenable for 6 months as from 1st January, 1951.

Applications (on a form obtainable from the House Governor), with copies of 3 recent testimonials, should be sent to the House Governor by 4th December, 1950.

ST. JAMES' HOSPITAL, Ouseley-road, Balham, S.W.12. 2 JUNIOR REGISTRAR posts in Casualty Department of above Hospital, vacant in December and January respectively.

Applications, stating age, qualifications, experience, and names of 2 referees, to the Secretary, Wandsworth Hospital Group, 14, Atkins-road, Balham, S.W.12, as soon as possible.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Required, HOUSE PHYSICIAN (House Officer, first, second, or third post), post vacant immediately. Salary, &c., in accordance with national scale. Tenable for 6 months.

Application forms obtainable from the Secretary, Stepney Group Hospital Management Committee, Raine-street, E.1.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Required, JUNIOR REGISTRAR (Casualty Officer). Successful candidate may elect to be non-resident. Salary, &c., in accordance with national scale.

Application forms obtainable from the Secretary, Stepney Group Hospital Management Committee, Raine-street, Wapping, E.1.

ST. GEORGE'S HOSPITAL, S.W.1. Required, Surgical FIRST ASSISTANT (approximately full-time) for Thoracic Surgery. Appointment for 1 year in the first instance. Successful candidate will be graded as Senior Registrar or Registrar according to experience and seniority. Appointment commences as soon as possible.

Applications, with names of 2 referees, should be sent by 6th December, 1950, to P. H. CONSTABLE, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Required, Resi-DENT ANÆSTHETIST. Appointment for 6 months, as from 3rd January, 1951, at a salary of either £400 or £450 p.a., according to experience of successful candidate, less £100 p.a. for board and residence provided.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and experience, with names and addresses of 3 referees, should reach undersigned by 9th December. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Ophthalmic DEPARTMENT. Required, REGISTRAR (non-resident) at Western Ophthalmic Hospital. Candidates must be registered medical practitioners, with postgraduate experience, and must hold, or be studying for, a higher Diploma in Ophthalmology. Appointment for a first period of 12 months, as from 1st January, 1951, the holder to be eligible for reappointment for 2 further periods of 12 months. The grading for this post is Senior Registrar, and salary will be in accordance with that laid down in the terms and conditions of service of hospital medical and dental staffs.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, with names and addresses of 3 referees, should recah undersigned by 9th December.

ALAN POWDITCH,
Secretary to the Board of Governors.

ST. THOMAS'S HOSPITAL, London, S.E.1. Required, RESIDENT ASSISTANT PHYSICIAN (Senior Registrar grade) for 1 year in the first instance as from 15th February, 1951. Renewable for a second year. Terms and conditions of service of hospital medical and dental staffs will apply.

Applications (12 copies), stating age, qualifications with dates, details of experience, and names and addresses of 3 referees to whom the Hospital may write, should be received by the Clerk of the Governors by 8th December, 1950.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (164 Beds.) Required, JUNIOR REGISTRAR ANÆSTHETIST at above Hospital. Appointment for 1 year. Salary £670 p.a., less £130 p.a. for board and lodging.

Applications, stating age, nationality, qualifications, and experience, with 3 testimonials, should reach undersigned by 9th December, 1950.

FRANK CHAMBERS, Group Secretary,
Central Group Hospital Management Committee.
213, Kingsland-road, London, E.2.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications for post of SENIOR REGISTRAR in the Dental Department are not now required.

WANSTEAD HOSPITAL, Hermon-hill, Wanstead, London, E.11. (200 Beds.) Required, JUNIOR REGISTRAR (Resident Anæsthetist), post vacant early January, 1951. Salary £670 p.a. A deduction of £130 p.a. made for board, lodging, &c. Hospital recognised for the D.A.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be sent by 9th December, 1950, to the Secretary, Hospital Management Committee, Forest Group (No. 11), Langthorne-road, Leytonstone, E.11.

WANSTEAD HOSPITAL, Hermon-hill, Wanstead, E.11. (200 Beds.) Required, HOUSE SURGEON, post vacant 1st January, 1951. Salary £350, £400, or £450 p.a., according to experience with a deduction at rate of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, and experience, and names of 2 referees, should be sent by 2nd December, 1950, to the Secretary, Hospital Management Committee, Forest Group (No. 11), Langthorne-road, Leytonstone, London, E.11.

WOOLWICH GROUP HOSPITAL MANAGEMENT COM-MITTEE. Required, REGISTRAR in Orthopædics for duty at hospitals in the Group. Appointment for 1 year in the first instance with salary of £775 a year for first year and £890 in second or any subsequent year.

Applications, giving particulars of age, qualifications, and experience, with relevant dates, with copies of 3 testimonials, should be sent to the Secretary, Memorial Hospital, Shooters-hill, S.E.18, by 13th December, 1950.

WHIPPS CROSS HOSPITAL, Whipps Cross-road, Leytonstone, E.11. HOSPITAL MANAGEMENT COMMITTEE, LEYTONSTONE GROUP. Required, HOUSE PHYSICIAN (first, second, or third post). Salary and conditions of service in accordance with those decided by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names of 3 referees, to the Medical Superintendent of the Hospital, by 6th December, 1950.

WESTMINSTER CHILDREN'S HOSPITAL. House PHYSICIAN required for 6 months from 1st February. Salary £400 or £450 p.a., with deduction of £100 for residential emoluments.

Applications, with copies of testimonials, should be submitted by 5th December to the Assistant Secretary, Westminster Children's Hospital, Vincent-square, S.W.1.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE PHYSICIAN. Salary £350–£450 p.a., less £100 p.a. for residence. Appointment for 6 months from 1st Janaury, 1951, plus 14 days locum tenens duty from 17th December, 1950.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 2 testimonials, to Assistant Secretary, by 11th December, 1950.

Provincial

ASCOT, BERKS. HEATHERWOOD ORTHOPÆDIC HOSPITAL. JUNIOR REGISTRAR (orthopædic) required. Salary on national scale. The Hospital is a regional orthopædic centre for general orthopædic conditions, including fractures.

Applications, giving full details, experience, and qualifications, with names of 2 referees, to be sent to the Administrative Officer.

ASHTON-UNDER-LYNE. LAKE HOSPITAL. (600 Beds.) Required, HOUSE PHYSICIAN for duty at above Hospital and at other hospitals in the Group if required, to commence duty mid-December. Appointment limited to 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and lodging, &c. R practitioners within 3 months of qualification, also those holding first posts may apply.

Applications should be addressed to—
R. W. MCVITY, Secretary, Ashton, Hyde, and
Glossop Hospital Management Committee.
Astley-road, Stalybridge, Cheshire.

AMERSHAM GENERAL HOSPITAL, Bucks. House SURGEON required, post vacant 1st December, 1950. Salary in accordance with National Health Service terms and conditions of service.

Applications, stating age, nationality, qualifications with dates, with 2 recent testimonials, to be sent immediately to Medical Director.

AYLESBURY, BUCKS. TINDAL GENERAL HOS-PITAL. RESIDENT SURGICAL OFFICER (Junior Registrar), Male. Salary £670 p.a., less a charge for full residential emoluments, vacant end of this year. The Hospital at present consists of 272 Beds, of which 129 are for the acute sick, and there is a total of 4 Resident Medical Officers. Reorganisation in the near future will, however, provide 282 Beds, of which 113 will be for acute surgical cases, and these plans will bring about the centralisation at this Hospital of the general adult surgical beds to be provided in the Aylesbury area. Post offers excellent general surgical experience and is recognised for the F.R.C.S. Applicants should preferably, but not necessarily, hold the Fellowship of one of the Royal Colleges of Surgeons.

Please apply, with two testimonials or names for reference, stating date free to commence duty, to the Administrative Officer.

AYLESBURY. ROYAL BUCKINGHAMSHIRE HOSPITAL. (136 Beds.) HOUSE SURGEON (general surgery), second or third post, vacant 9th January, 1951. It is possible that during the 6 months the appointment may be modified to include accident and orthopædic surgery. National terms of service.

Applications, with 2 testimonials, to the Secretary-Superintendent by 9th December, 1950.

BARNSLEY. BECKETT HOSPITAL. Required, Casualty OFFICER at above Hospital. Appointee required to perform the duties of Deputy Resident Surgical Officer. Salary £400 p.a. if second post held, or £450 p.a. if third or subsequent post held. A deduction of £100 p.a. will be made in respect of board, lodging, and other services provided.

Applications, with copies of 2 testimonials, to be sent as soon as possible to— J. H. NUNN, Secretary,
Barnsley Hospital Management Committee.
33, Gawber-road, Barnsley.

BARNSLEY. BECKETT HOSPITAL. Required, House SURGEON (in main to Special Departments) at above Hospital. Salary £350 p.a. if first post held, £400 p.a. if second post held, or £450 p.a. if third or subsequent post held. A deduction of £100 made in respect of board, lodging, and other services provided.

Applications, with copies of 2 testimonials, to be sent as soon as possible to— J. H. NUNN, Secretary,
Barnsley Hospital Management Committee.
33, Gawber-road, Barnsley.

BARNSLEY. ST. HELEN HOSPITAL. Required, Junior HOSPITAL MEDICAL OFFICER, in salary grade £700–£1000. Previous experience in obstetrics an advantage. Duties also on the general side. Hospital recognised by the R.C.O.G.

Applications, stating age, experience, with names of 3 referees, should be sent immediately to—
J. H. NUNN, Secretary,
Barnsley Hospital Management Committee.
33, Gawber-road, Barnsley.

BARRY ACCIDENT AND SURGICAL HOSPITAL. WELSH REGIONAL HOSPITAL BOARD. REGISTRAR (Locum Tenens) required for month of January, 1951. Small but busy Surgical Hospital.

Applications to the Secretary, Cardiff Hospital Management Committee, St. David's Hospital, Cardiff.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. Required, RESIDENT HOUSE SURGEON at above Hospital (189 Beds), with surgical work under control of Consultant Surgeons. National conditions and salary scale (House Officer grade).

Applications, stating age, qualifications, and experience, with copy testimonials or names of referees, should be forwarded to the Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. Required, ORTHOPÆDIC, TRAUMATIC AND CASUALTY REGISTRAR (Junior Registrar grade), resident or non-resident. Hospital comprises 189 Beds with large Outpatient Departments. Duties comprise service in the Orthopædic, Traumatic, and Casualty Departments. Salary £670 p.a., less £100 p.a. for emoluments, if resident.

Applications, stating age, qualifications, experience, and intimation as to whether a residential or non-residential post is required, with copies of 2 recent testimonials, should be forwarded to the Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness.

BEXHILL HOSPITAL, Bexhill-on-Sea. Required, House SURGEON, post vacant 4th December, 1950, at above Hospital and for service within the Hastings group of hospitals. Appointment for 6 months. Salary within scale £350–£400–£450 p.a., according to experience and posts held, less a deduction of £100 p.a. for full residential emoluments. R practitioners within 3 months of qualification may apply.

Applications to be sent to the Administrator, Bexhill Hospital.
H. A. FROGGATT, Secretary,
Hospital Management Committee (Hastings Group).
11, Holmesdale-gardens, Hastings.

BEBINGTON, WIRRAL. CLATTERBRIDGE GENERAL HOSPITAL. (672 Beds.) HOUSE OFFICER (general medicine) to commence 1st January, 1951. Appointment for 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. residence.

Applications, with names of 2 referees, to Secretary.

BEBINGTON, WIRRAL. CLATTERBRIDGE GENERAL HOSPITAL. (672 Beds.) HOUSE SURGEON (orthopædics). Appointment for 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. residence.

Applications, with names of 2 referees, to Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. The BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Required, SURGICAL HOUSE OFFICER (second or third post) in the E.N.T. Department at above Hospital. Appointment will be made in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded to the Secretary, Dudley Road Hospital.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. GENERAL HOSPITAL. Required, SURGICAL REGISTRAR (resident), Senior Registrar grade, for duty at above Hospital. Candidates must be registered medical practitioners, have held a resident appointment in a teaching hospital, and should possess the F.R.C.S. Salary in accordance with the terms and conditions of service of hospital medical and dental staff.

Forms of application may be obtained from, and should be returned not later than 16th December to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITALS FOR WOMEN. THE BIRMINGHAM MATERNITY HOSPITAL. Required, 2 REGISTRARS IN OBSTETRICS AND GYNÆCOLOGY, posts vacant 1st January, 1951. Each Registrar to alternate duty for a period of 6 months at the Hospital for Women and the Maternity Hospital. Appointments resident or non-resident by arrangement. Posts recognised for the examinations of the Royal College of Obstetricians and Gynæcologists, and applicants should have held house appointments and at least 1 obstetrical post.

Forms of application may be obtained from, and should be returned immediately to—
BERNARD SYLVESTER, House Governor.
The Birmingham and Midland Hospitals for Women,
Showell Green-lane, Sparkhill, Birmingham, 11.
27th October, 1950.

BIRMINGHAM. THE SKIN HOSPITAL. (61 Beds.) Required, HOUSE OFFICER. The Inpatient Department is modern and well-equipped and provides facilities for the study of skin diseases. Successful applicant required to assist Consultants at Outpatient clinics.

Applications should be forwarded to the undersigned immediately. J. PRESTON, Secretary,
The Birmingham (Dudley Road) Group of Hospitals.
Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE CHILDREN'S HOSPITAL. The UNITED BIRMINGHAM HOSPITALS. HOUSE OFFICER (surgical) required for 6 months, to commence duty 1st January, 1951. Duties mainly general surgery but the officer will have, in addition, the opportunity of undertaking a certain amount of special surgery. Salary in accordance with terms and conditions of service for hospital medical staff, less £100 p.a. for board-residence.

Forms of application may be obtained from undersigned and should be returned by 8th December, 1950.
N. R. WINWOOD, House Governor.
Ladywood-road, Birmingham, 16.

BIRMINGHAM, 3. EAR AND THROAT HOSPITAL, Edmund-street. THE BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Required, HOUSE SURGEON at above Hospital. Appointment subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, experience, with copies of 2 recent testimonials, should be forwarded to—
J. PRESTON, Secretary, Hospital Management Committee.
Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 31. HOLLYMOOR HOSPITAL, North-FIELD. Required, JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female), resident or non-resident. Duties to commence 1st December, 1950, or as soon after that date as possible. This Hospital, of over 600 Beds, has undergone extensive renovation after occupation by H.M. Forces, and is now being developed as a civilian mental hospital. The present number of patients is approximately 370. A comprehensive programme of treatment is in operation, including both physical and psychological approaches, and there is also an active psychiatric outpatient clinic at the Selly Oak Hospital, Birmingham. Previous post-graduate psychiatric experience is not essential, but applicants should normally have held the post of house officer in a general hospital. Appointment in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales) at a salary of £700–£1000 p.a., and subject to National Health Service (Superannuation) Regulations, 1950.

Applications, stating full name, age, nationality, qualifications, and experience, and providing names of 3 referees, to be sent within 14 days of publication of this advertisement to the Secretary, Offices of the Management Committee, Birmingham No. 6 Group (Mental B) Hospital Management Committee, Rubery Hill Hospital, Birmingham.

BIRMINGHAM REGIONAL HOSPITAL BOARD invite applications for appointment of Whole-time SENIOR REGISTRAR in Ophthalmology, Birmingham (Dudley Road) group, for duties at Birmingham and Midland Eye Hospital. Candidates must possess Diploma in Ophthalmology and wide experience in specialty. Appointment in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 9th December. Canvassing will disqualify. Candidates may visit group hospitals.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILITATION CENTRE, BIRMINGHAM, 15. (209 Beds.) GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female). Appointment for 6 months, of which the first 2 will be with the Burns Unit (Medical Research Council) and the remainder in general traumatic service. The Hospital treats 50,000 new patients each year. Post offers practical experience in the treatment of all types of injury and includes a course of instruction on accident surgery given by the Consultant staff. Salary in accordance with the national terms and conditions of hospital medical and dental staffs.

Detailed applications, with copies of recent testimonials, to be sent to the Administrator.

BATH. ST. MARTIN'S HOSPITAL. Required, House SURGEON. Salary and conditions of service in accordance with those issued by the Ministry of Health, plus an additional £50 p.a. in excess of the standard scale.

Applications, stating age, qualifications, and experience, with copies of 3 testimonials, to be received by the undersigned as soon as possible.

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BEVERLEY, YORKS. WESTWOOD HOSPITAL. House SURGEON (first, second, or third post) required. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications to the Secretary.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (300 occupied Beds.) Required, RESIDENT HOUSE OFFICER (surgical), first or second post held. Salary £350–£400 p.a., less £100 p.a. for residential emoluments. Appointment to commence 1st January, 1951, and is subject to terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or names of referees, should be sent by 9th December, 1950, to the Administrative Officer.

BLACKPOOL. "GLENROYD" MATERNITY HOSPITAL. (60 Beds.) Required, HOUSE OFFICER (obstetrics), resident, for 6 months from 5th January, 1951. Salary and conditions of service in accordance with Ministry of Health Regulations—i.e., £350 p.a.–£450 p.a. according to previous appointments, with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, qualifications with dates, and copies of 3 recent testimonials, should be sent to—

WALTER R. SMITH, Secretary,
Blackpool and Fylde Hospital Management Committee.
Victoria Hospital, Blackpool.

BLACKPOOL. VICTORIA HOSPITAL. Required, JUNIOR REGISTRAR for the E.N.T. Department, post vacant 31st December, 1950. Salary and conditions of service in accordance with terms and conditions of service of hospital medical and dental staffs (England and Wales)—i.e., £670 p.a., non-resident. The Hospital is recognised under the D.L.O. regulations.

Applications, stating age, qualifications and dates, with copies of 3 recent testimonials, should be sent to the Administrative Officer, Victoria Hospital, Blackpool.

WALTER R. SMITH, Secretary,
Blackpool and Fylde Hospital Management Committee.

BLACKPOOL. VICTORIA HOSPITAL. Required, HOUSE SURGEON to the Eye and E.N.T. Department, post vacant 1st December. Post for 6 months and is recognised for the D.O.M.S. and D.L.O. examinations. Salary and conditions of service in accordance with Ministry of Health recommendations—i.e., £350 p.a.–£450 p.a. according to posts previously held, with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, qualifications, and copies of 3 recent testimonials, should be sent to the Administrative Officer, Victoria Hospital, Blackpool.

WALTER R. SMITH, Secretary,
Blackpool and Fylde Hospital Management Committee.

BOWDON, CHESHIRE. MANCHESTER THROAT AND CHEST HOSPITAL. (53 Beds.) Required, HOUSE OFFICER to commence duties as soon as possible. 6 months' appointment. This is a busy hospital staffed by Manchester Consultants and a full-time Registrar. Facilities for postgraduate study will be afforded and there is also opportunity for much practical experience. Salary and conditions as laid down in accordance with the terms of service issued by the Ministry of Health.

Applications, stating age, qualifications, &c., should be forwarded to E. A. BIDEN, Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (488 Beds.) Required, HOUSE SURGEON, post vacant 29th December, 1950. Salary in accordance with National Health Service scale £350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of the above Hospital.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (488 Beds.) Required, CASUALTY OFFICER, post vacant 15th December. Salary in accordance with National Health Service scale £350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of above Hospital.

BOVEY TRACEY. HAWKMOOR SANATORIUM, near BOVEY TRACEY, DEVON. EXETER SPECIAL HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required immediately for Thoracic Surgery Unit. Previous resident hospital experience desirable. Salary in accordance with National Health Service terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, qualifications, and experience, to be addressed to the Medical Superintendent at the Sanatorium from whom further particulars may be obtained.

BRADFORD ROYAL INFIRMARY. House Surgeon required, vacant 16th December. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeons, vacant 3rd and 17th January, 1951. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. Orthopædic and CASUALTY HOUSE SURGEON required 4th January, 1951. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRENTWOOD MENTAL HOSPITAL, Brentwood, Essex. JUNIOR REGISTRAR (Male or Female) required at above Hospital. Appointment affords excellent opportunities for gaining experience in modern methods of psychiatric treatment, and successful applicant will be able to participate in the Regional training scheme. Salary £670 p.a., less £150 for residential amenities.

Applications, stating age, experience, &c., with names of 3 referees, to the Physician-Superintendent as soon as possible.

BRIGHTON, 7. SUSSEX EYE HOSPITAL. Brighton AND LEWES HOSPITAL MANAGEMENT COMMITTEE. (56 Beds.) SENIOR HOUSE SURGEON required, post vacant 1st January, 1951. Salary £400 or £450 a year, according to experience, less £100 in respect of residential emoluments.

Applications, with full details of experience, &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7, as soon as possible.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (302 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. CASUALTY HOUSE SURGEON (duties include care of fracture cases) required, post vacant 1st January, 1951. Salary £350–£450 a year, according to experience, less £100 in respect of residential emoluments.

Applications, with full details of experience &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer at the Hospital, as soon as possible.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (302 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (including gynæcological) required, post vacant 1st January, 1951. Salary £400 or £450 a year, according to experience, less £100 in respect of residential emoluments.

Applications, with full details of experience, &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer, Royal Sussex County Hospital, as soon as possible.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required for duties in the E.N.T. Department of the Group Hospitals, vacant 1st January, 1951. Recognised for F.R.C.S. and D.L.O. Salary £350–£450 a year, according to experience.

Applications, with full details of experience, &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer at the Royal Sussex County Hospital, Brighton, 7, as soon as possible.

BROMSGROVE. BARNSLEY HALL HOSPITAL. Mid-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR REGISTRAR. Salary £670 p.a. in accordance with the terms and conditions of service issued by the Ministry of Health. Furnished quarters available at a charge to be fixed.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be forwarded as soon as possible to the Medical Superintendent at above Hospital.

BURY ST. EDMUND'S. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) WEST SUFFOLK HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (first or second post) for Pædiatric and General Medical Department, post vacant 1st January, 1951. Appointment initially for 6 months. Salary £350–£400 p.a., less £100 emoluments, in accordance with National Health Service scale.

Applications, stating age, nationality, qualifications, and experience, with no more than 3 recent testimonials, to the House Governor.

BURY ST. EDMUND'S. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) WEST SUFFOLK HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (first or second post) for General Surgical Department, post vacant early in New Year. Appointment initially for 6 months. Salary £350 or £400 p.a., less £100 emoluments, in accordance with National Health Service scale.

Applications, stating age, nationality, qualifications, and experience, with no more than 3 recent testimonials, to the House Governor.

BURY GENERAL HOSPITAL, Bury, Lancs. (An Acute General Hospital of 178 Beds mainly surgical with beds for orthopædic and other specialties.) Required, JUNIOR ANÆSTHETIC REGISTRAR (resident or non-resident). Post vacant 31st December, and is recognised for the D.A. Tenure of appointment 1 year. Salary, &c., in accordance with the terms and conditions of service for hospital medical and dental staffs (England and Wales), that is, £670 p.a., non-resident (with a deduction of £100 where the post is resident).

Applications, stating age, nationality, qualifications, and experience, with copies of 2 testimonials, should be forwarded immediately to undersigned, from whom further particulars can be obtained. H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (134 Beds.) Required, HOUSE SURGEON. 6 months' appointment. Salary in accordance with National Health Service scale, full residential emoluments. R practitioners within 3 months of qualification may apply.

Applications to be sent to—

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.
Glangwili, Carmarthen.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (134 Beds.) Required, RESIDENT SURGICAL OFFICER. 3 other resident medical staff. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating qualifications and experience, should be forwarded immediately to—

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.
Glangwili, Carmarthen, 13th September, 1950.

BURLEY-IN-WHARFEDALE. SCALEBOR PARK MENTAL HOSPITAL. Required, 2 JUNIOR REGISTRARS. Terms and conditions of service as laid down by the Ministry of Health. The Hospital (289 Beds) provides accommodation for private and Health Service patients, and has a large turnover of cases (over 400 admissions in 1949). All forms of active treatment are given. Outpatient Clinics are conducted by the medical staff and there are ample facilities for training. Quarters for single persons are available in the Hospital at a charge of £130 a year. Facilities available for successful candidates to take part in training in all parts of psychiatry in conjunction with the University of Leeds Department of Psychiatry.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be sent forthwith to the Secretary, Ilkley and Otley Hospital Management Committee, The General Hospital, Otley, near Leeds.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, E.N.T. AND EYE HOUSE SURGEON post now vacant at above Hospital. Post is recognised for the D.L.O. and D.O.M.S. examinations. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 for residential emoluments.

Applications, giving full particulars of qualifications and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ST. HELIER GROUP OF HOSPITALS. Required, SENIOR REGISTRAR in the Medical Department at above Hospital, post vacant 1st January, 1951. Appointment subject to provisions of National Health Service superannuation regulations and in accordance with the agreed terms and conditions of service of hospital medical and dental staffs for the time being in operation.

Forms of application (which should be returned duly completed to the Group Secretary, St. Helier Hospital, Carshalton, Surrey, not later than 14 days after appearance of this advertisement) will be forwarded on receipt of stamped addressed foolscap envelope. Canvassing will disqualify, but candidates are not precluded from visiting the Hospital.

CARDIFF. GLAN ELY HOSPITAL. (236 Beds, pulmonary and non-pulmonary tuberculosis.) Required, RESIDENT MEDICAL OFFICER at above, which is a Hospital for the treatment of all forms of tuberculosis. Experience afforded in thoracic surgery and tuberculosis, of bones and joints, genito-urinary tract and skin. Salary £400 p.a., less a deduction of £100 p.a. for emoluments, or a cottage is available for a married man. R practitioners may apply.

Applications to the Secretary, Cardiff Hospital Management Committee, St. David's Hospital, Cowbridge-road, Cardiff.

CAMBRIDGE. EAST ANGLIAN REGIONAL HOSPITAL BOARD. SENIOR SURGICAL REGISTRAR to the Thoracic Surgical Unit at Papworth Hospital, Cambridgeshire. Preference given to candidates with a higher surgical qualification and experience in thoracic surgery. Terms and conditions of service for hospital medical and dental staffs will apply.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, should be sent to undersigned by 4th December, 1950. Candidates are invited to visit the Hospital by direct arrangement with Dr. L. B. Stott, The Chief Medical Officer.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

COLCHESTER. SEVERALLS HOSPITAL. Required, JUNIOR REGISTRAR at above Mental Hospital. Salary £670 p.a., less £120 for residential emoluments. There are excellent opportunities for up-to-date experience and postgraduate work in all branches of psychiatry, including treatment of neurosis. Opportunities given at the Hospital for clinical instruction for the D.P.M.

Applications, with particulars, and copies of testimonials or names of referees, to the Medical Superintendent, Severalls Hospital, Colchester, as soon as possible.

COLCHESTER. SEVERALLS MENTAL HOSPITAL. (2027 Beds.) HOUSE OFFICER (House Physician, first, second, or third post). Salary £350, £400, or £450 p.a., according to number of posts held. There are excellent opportunities for up-to-date experience and postgraduate work in all branches of psychiatry, including treatment of neurosis. Opportunities given at the Hospital for clinical instruction for the D.P.M.

Applications, stating full name, age, qualifications, and experience, with names of 2 referees, to the Medical Superintendent within 14 days of appearance of this advertisement.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. ESSEX COUNTY HOSPITAL, COLCHESTER (20 Gynæcological Beds), COLCHESTER MATERNITY HOSPITAL (22 Gynæcological Beds). Required, HOUSE OFFICER (Male or Female), first, second, or third post, obstetric and gynæcological. Appointment tenable for 6 months, to commence about middle of December. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

COVENTRY GROUP NO. 20 HOSPITAL MANAGEMENT COMMITTEE. Applications invited for under-mentioned posts. National scale of salary :—

Nuneaton Hospitals

HOUSE PHYSICIAN.

PÆDIATRIC HOUSE PHYSICIAN for duties at Bramcote and George Eliot Hospitals which have accommodation for some 50 children. Total Beds 340.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials, to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

CHICHESTER HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT SURGICAL OFFICER (Registrar) required 1st February, 1951, for duty primarily at the Royal West Sussex Hospital, Chichester (202 Beds). Resident Surgical Officer is senior of 5 residents. Appointment subject to the current agreed terms and conditions of service of hospital medical and dental staffs and to the National Health Service superannuation regulations. Salary £775 first year, £890 second year, each less £150 p.a. for residence.

Forms of application to be had from Group Secretary, Royal West Sussex Hospital, Chichester, and to be submitted by 11th December. Candidates may visit the Hospital but canvassing will disqualify.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 Beds.) HOUSE PHYSICIAN required 1st January, 1951, for 6 months. House staff 5 in all. Salary £350, £400, or £450 p.a., according to posts already held, less £100 for residence.

Apply to the Secretary, with 3 copy testimonials.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (413 Beds.) Required, RESIDENT HOUSE SURGEON for the Gynæcological and Special (E.N.T., Eye, &c.) Departments. Salary in accordance with terms and conditions of Ministry of Health. The Hospital is within easy reach of London.

Applications, with testimonials or names of referees, should be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CHELMSFORD AND ESSEX AND ST. JOHN'S HOSPITALS. HOUSE SURGEON required to work at above Hospitals. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

CHESTER ROYAL INFIRMARY. Medical Officer (Junior Hospital Medical Officer grade) required for the Orthopædic and Casualty Departments, duties to commence as soon as possible. This is a Senior Resident appointment, to be held for 1 year in the first instance, and has been made for the purpose of combining the work of these 2 departments to form an effective Accident and Casualty Service. Previous orthopædic experience an advantage. A deduction of £150 p.a. made in respect of board and lodging, &c.

Applications, giving details of age, experience, and qualifications, with names and addresses of 2 referees, should be sent immediately to—

P. R. J. ARNOLD, Secretary, XIII Chester and District Hospital Management Committee.

5, King's Buildings, Chester.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) Required, HOUSE SURGEON (resident). Salary in accordance with national scale.

Apply, giving age and references, forthwith to—

G. W. BECKWITH, Secretary.

DAVYHULME. PARK HOSPITAL. (General Hospital— 500 Beds.) Required, MEDICAL HOUSE OFFICER. 6 months' appointment. Salary £350–£450 p.a. according to experience. £100 deducted for residential accommodation and services. Vacancies occur periodically in the various Departments, and Medical House Officers are eligible for appointment to the posts of House Officer (surgical and obstetrical) at the end of the term of service as Medical House Officer when such vacancies exist.

Application forms, returnable by 30th November, may be obtained from the Secretary, West Manchester Hospital Management Committee.

DEWSBURY, BATLEY AND MIRFIELD HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR HOSPITAL MEDICAL OFFICER in the specialty of pædiatrics. Post is resident and subject to 1 month's notice on either side. Duties to be carried out at hospitals in the Group. Salary according to national scale.

Applications, stating age, qualifications, and nationality, with names of 2 referees, should be forwarded to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

DORCHESTER. DORSET COUNTY HOSPITAL. (125 Beds.) HOUSE SURGEON (Male or Female) required, post vacant mid-December, 1950. Post tenable for 6 months. Appropriate Ministry of Health salary scale according to experience, with a deduction at rate of £100 p.a. for residence.

Applications, giving age, experience, qualifications, and nationality, with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, immediately.

DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Required, NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER in Chest Clinics. Salary and conditions of service in accordance with terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded by 22nd December, 1950, addressed to the Secretary, Doncaster Hospital Management Committee, c/o Doncaster Royal Infirmary, Doncaster.

DONCASTER ROYAL INFIRMARY. Required, Junior HOSPITAL MEDICAL OFFICER (pathology). Salary commencing at £700 p.a.; with annual increments of £50. Post is non-resident. Salary and conditions of service in accordance with terms and conditions of service of hospital medical and dental staffs (England and Wales). Appointment tenable for 3 years in the first instance, subject thereafter to annual renewal.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded by 29th December, 1950, to the Secretary, Doncaster Hospital Management Committee, c/o Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds—recognised under the Regulations for the Examinations of the R.C.S.) Required, HOUSE SURGEON (Male or Female). Salary £350, £400, or £450 p.a., according to experience. A deduction at rate of £100 p.a. made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded immediately to—

ARTHUR JONES, Secretary,
Doncaster Hospital Management Committee.
c/o Doncaster Royal Infirmary.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

The Guest Hospital, Dudley (154 Beds)
CASUALTY OFFICER, post now vacant.
RESIDENT ANÆSTHETIST, post now vacant.
Corbett Hospital, Stourbridge (106 Beds)
HOUSE PHYSICIAN, post now vacant.
CASUALTY OFFICER, post now vacant.

Applications, stating age, experience, with copies of 3 recent testimonials, to— H. RAYMOND HURST,
Secretary to the Management Committee.
The Guest Hospital, Dudley.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX, and ANNEXE at BUSHEY. Required, 2 RESIDENT OBSTETRIC HOUSE SURGEONS, posts vacant 18th January and 15th February, 1951. Previous obstetric experience desirable. Post recognised for M.R.C.O.G. purposes. 6 months' appointment. Salary £400–£450 p.a., according to experience, deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 9th December, 1950. Candidates selected for interview will be notified by 16th December, 1950.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, RESIDENT GYNÆCOLOGICAL HOUSE SURGEON, post vacant 18th January, 1951. Post recognised for M.R.C.O.G. purposes. 6 months' appointment. Salary £400–£450 p.a., according to experience, deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 9th December, 1950. Candidates selected for interview will be notified by 16th December, 1950.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, RESIDENT HOUSE PHYSICIAN, post vacant 10th January, 1951. 6 months' appointment. Salary £400–£450 p.a., according to experience, deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 9th December, 1950. Candidates selected for interview will be notified by 16th December, 1950.

EPPING. ST. MARGARET'S HOSPITAL. (500 Beds.) Required, HOUSE PHYSICIAN (second or third post) at above Hospital. Salary on National Health Service scale according to posts held, less a deduction of £100 p.a. for board and lodging and other services provided.

Applications in writing, with copies of 2 recent testimonials, should be sent immediately to the Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE PHYSICIAN (first post), general medical duties, vacant 19th January, 1951. Salary and conditions as prescribed by the Ministry of Health. 6 months' appointment. R practitioners within 3 months of qualification eligible.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, to the Medical Director of the Hospital by 20th December, 1950. Canvassing disqualifies.

FARNHAM HOSPITAL, Hale-road, Farnham, Surrey. ASSISTANT SURGICAL OFFICER (first, second, or third post). Salary £350–£450 p.a., according to experience. £100 p.a. deducted in respect of board and lodging, &c. Appointment for 6 months, renewable for further 6 months if applicant is not liable for service with H.M. Forces.

Applications by letter, stating age, qualifications, and experience, and present appointment, with 1–3 recent testimonials (copies), to the Medical Superintendent of the Hospital.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. GRANTHAM HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SURGICAL OFFICER, post vacant 1st January, 1951. Applicants should have had reasonably broad experience in surgical work. Appointment, which will be for 6 months in the first instance, is subject to National Health Service terms and conditions of service and National Health Service superannuation regulations. Salary within scale of £700 (for an officer appointed not less than 2 years after registration as a medical practitioner)–£50–£1000 p.a., according to experience in the grade, less a deduction at rate of £130 p.a. in respect of residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with 1–3 recent testimonials, or, alternatively, names of referees, should be sent as soon as possible to—

W. A. MARSHALL, Secretary.
101, Manthorpe-road, Grantham, Lincs.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL. (120 Beds.) NORWICH, LOWESTOFT AND GREAT YARMOUTH (GROUP 6) HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications to Secretary, Great Yarmouth and Gorleston General Hospital, Dene Side, Great Yarmouth.

GREAT BARROW, CHESTER. BARROWMORE HOSPITAL. (205 Beds.) Applications invited from Male registered medical practitioners for following resident appointments :—

JUNIOR HOSPITAL MEDICAL OFFICER.
HOUSE OFFICER.

Salaries and conditions of service in accordance with national agreement. The Hospital is for the treatment of pulmonary tuberculosis and includes active major thoracic surgery unit. Ex-patients who possess suitable qualifications are especially invited to apply for the positions.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be sent immediately to the Secretary.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Locum RESIDENT ANÆSTHETIST required at above Hospital. Remuneration on scale £700–£1000 p.a. Previous experience in anæsthetics essential.

Apply immediately to the Administrative Officer, Grimsby General Hospital.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Required, HOUSE SURGEON (Male or Female). Salary according to experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be addressed to the Secretary at the Royal Halifax Infirmary, Halifax.

HALIFAX GENERAL HOSPITAL. (425 Beds.) House PHYSICIAN required. Salary according to experience.

Applications, stating age, sex, nationality, qualifications, experience, and enclosing copies of 3 testimonials, to be forwarded to the Secretary, at the Royal Halifax Infirmary.

HALIFAX. ST. JOHN'S HOSPITAL. Required, House PHYSICIAN (Male or Female). Appointee required to undertake regular service each day at the St. John's Hospital, Halifax, which at present accommodates 400 aged sick and chronic cases. This Hospital is being developed and is already provided with consultant medical and ancillary services. The House Physician will be responsible to the Medical Registrar—whose main duties are at this Hospital, but who also undertakes duty at the Royal Halifax Infirmary—and to the visiting Consultants. Appointee may be required to undertake relief duties at the Royal Halifax Infirmary, which is a hospital for acute sick patients with a busy Outpatients Department. Residence in the first instance may be at the Royal Halifax Infirmary, but will ultimately be at St. John's Hospital.

Applications, stating age, sex, nationality, qualifications, and experience, and containing names and addresses of 3 persons from whom testimonials can be obtained, to be forwarded to—

R. W. RANSON, Secretary,
Halifax Area Hospitals Management Committee.
Royal Halifax Infirmary, Halifax.

HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR REGISTRAR IN ANÆSTHETICS. Appointee will work under the direction of the Consultant Anæsthetist mainly at the Harrogate and District General Hospital, but will also be required, when necessary, to undertake duty at any of the other hospitals in the Group. Salary £670 p.a. Appointment subject to the passing of a medical examination and the provisions of the National Health Service (Superannuation) Regulations, 1950.

Applications, stating age, experience, and qualifications, to be forwarded to the Secretary, Harrogate and Ripon Hospital Management Committee, Hereford Lodge, Corbwall-road, Harrogate. Canvassing in any form, either directly or indirectly, will disqualify.

HARROGATE ROYAL BATH HOSPITAL, Cornwall-road, HARROGATE. (146 Beds—a National Hospital for the treatment of rheumatic and allied diseases.) HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT MEDICAL OFFICER. This Hospital is recognised as having an authorised Physical Medicine Department, and time spent in above post will afford good experience in physical medicine and orthopædics and will count towards the qualifying 12 months for the D.Phys.Med. Salary in accordance with National Health Service scale. Appointment for 6 months.

Applications to be forwarded to the Assistant Secretary, Royal Bath Hospital, Cornwall-road, Harrogate, immediately.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (160 Beds.) Applications invited for following appointments :—

RESIDENT SURGICAL OFFICER (Male). 6 months' appointment. Salary £450 p.a., less £100 p.a. for residential emoluments.

HOUSE SURGEON (Male or Female). 6 months' appointment. Salary £350–£450 p.a., according to previous posts held, less £100 p.a. for residential emoluments.

Applications in writing, stating age, qualifications with dates, and nationality, with copies of 3 testimonials, to be sent immediately addressed to the undersigned at Pembroke County War Memorial Hospital, Haverfordwest.

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.

HULL. DE LA POLE HOSPITAL, Willerby, near Hull, E. YORKS. (1050 Beds.) Whole-time HOUSE OFFICER (second or third post), accommodation for single person only. Modern methods applied for treatment of mental diseases and nervous disorders.

Detailed applications, with names of 3 referees, to the Secretary, No. 5 Hospital Management Committee, Hull B Group, Castle Hill, Cottingham, E. Yorks, by 27th November.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required in the E.N.T. Department at the Hull Royal Infirmary and the Victoria Hospital for Sick Children. Recognised for D.L.O. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. ORTHOPÆDIC HOUSE SURGEON required, vacant now. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required, vacant now. Recognised for F.R.C.S. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice on either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, HOUSE SURGEON at the Sutton Branch Hospital, post vacant now. Recognised for F.R.C.S. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. (143 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), post now vacant. 6 months' appointment. Post counts towards qualification D.C.H. Salary in accordance with terms of service issued by the Ministry of Health.

Applications, with testimonials, stating when free, to be sent as soon as possible to the Administrative Officer at the above address.

HORNCHURCH, ESSEX. ST. GEORGE'S HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER. This Hospital at present accommodates chronic sick patients and offers excellent geriatric experience. The present beddage is for 268 chronic sick patients which will later be increased. Salary, &c., in accordance with nationally agreed terms and conditions of service for hospital medical and dental staffs.

Applications, stating (in order) age, nationality, qualifications with dates, present and previous appointments, and details of experience, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, with copies of 2 most recent testimonials or names of 2 referees.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) E.N.T. REGISTRAR (Junior grade), non-resident. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, should be sent as soon as possible to— H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.

The Royal Infirmary, Huddersfield.

HERTFORD COUNTY HOSPITAL, Hertford, Herts. (171 Beds.) Required, HOUSE PHYSICIAN (Male), second or third post. 6 months' appointment. Preference given to applicants who have held resident surgical and medical posts in a general hospital. Salary £400–£450 p.a., less £100 for residential emoluments. Duties to commence 27th November, 1950.

Applications to the Secretary, Mr. P. G. BROOKS, Hertford No. 1 Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

IPSWICH BOROUGH GENERAL HOSPITAL.
RESIDENT ANÆSTHETIST HOUSE OFFICER required 17th, January.
HOUSE PHYSICIAN required immediately.
HOUSE PHYSICIAN required 2nd January.
HOUSE SURGEON to General Surgeon required 2nd January.
National salary scale.

Applications, with full particulars, to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital, Ipswich.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL.
(*a*) HOUSE SURGEON, vacant 8th January, 1951.
(*b*) HOUSE SURGEON (obstetric and gynæcological), vacant 17th January, 1951.
National salary scale.

Applications, with full particulars to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee, at the East Suffolk and Ipswich Hospital, Anglesea-road, Ipswich.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. HOUSE SURGEON, Orthopædic and Fracture Department, required 28th November. National salary scale.

Applications, with full particulars, to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) Required, JUNIOR ORTHOPÆDIC REGISTRAR to an Orthopædic Unit comprising 1 Specialist Orthopædic Surgeon and 1 Senior Orthopædic Registrar, post vacant now. Post recognised for F.R.C.S. examination and will include some casualty work. Post is full-time, and for 1 year. Salary, terms, and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary, Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY. (230 Beds.) Required, NON-RESIDENT JUNIOR REGISTRAR (anæsthetics), post vacant now. Post is full-time, and for 1 year. Salary, terms, and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary, Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster

KENDAL. WESTMORLAND COUNTY HOSPITAL. (82 Beds.) Required, RESIDENT JUNIOR SURGICAL REGISTRAR, post vacant now. Post is full-time, and for 1 year. Salary, terms, and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary, Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster.

KETTERING AND DISTRICT GENERAL HOSPITAL. (129 Beds, plus 40-Bed Annexe.) Required, SENIOR HOUSE SURGEON. 4 residents on staff. Salary £350–£450, according to experience, less £100 board-residence. Appointment for 6 months in the first instance, and post is now vacant.

Applications, with copies of 1–3 testimonials, to be sent as soon as possible to—
G. H. FENNELL, Assistant Secretary,
Kettering and District Hospital Management Committee.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Required, RESIDENT HOUSE SURGEON (second or third post), E.N.T. and Ophthalmic Departments, post now vacant. Tenable for 6 months. Salary according to number of previous posts held, and conditions of service in accordance with terms and conditions of service of hospital medical staff.

Applications to be sent as soon as possible to—
Miss V. WELLS, Assistant Secretary.

LEEDS. PUBLIC DISPENSARY AND HOSPITAL. Applications invited from registered medical practitioners for following House Officer appointments now vacant :—
JUNIOR CASUALTY OFFICER.
E.N.T. AND OPHTHALMIC HOUSE SURGEON.
6 months' appointments. Salary and conditions of service in accordance with the terms of service issued by the Ministry of Health—namely, £400 if second post held, or £450 p.a. if third or subsequent post held, with a deduction at rate of £100 p.a. in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded to the Administrative Medical Officer, St. James's Hospital, Leeds, 9, as soon as possible. J. FOLKARD, Secretary,
Leeds A Group Hospital Management Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. Required, REGISTRARS in the National Radiotherapy Centre at Leeds. The vacancies are for a Registrar and a Senior Registrar or 2 Senior Registrars, and candidates must possess the D.M.R.T.

Applications, stating age, nationality, experience, with names of 1–3 referees, to be sent as soon as possible to—
S. CLAYTON FRYERS, Secretary to the Board of Governors.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Required, RESIDENT AURAL OFFICER (Male). Candidates must have held house appointments and have had some experience in E.N.T. work. Post is graded as for a Senior House Officer or a Junior Hospital Medical Officer, according to qualifications and experience. There will be the possibility of advancement in due course to a training post for suitable candidates.

Applications, stating age, nationality, qualifications, and experience, with names of 1–3 referees, should be sent to undersigned not later than 10 days after appearance of this advertisement. S. CLAYTON FRYERS,
Secretary to the Board of Governors.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Required, REGISTRAR (Male) in the E.N.T. Department. Previous experience in the specialty necessary. The vacancy offers a valuable opportunity to gain the further experience required for higher qualification.

Applications, stating age, nationality, qualifications, and experience, with names of 1–3 referees, should be sent within 10 days of the appearance of this advertisement to—
S. CLAYTON FRYERS, Secretary to the Board.

LEEDS. SEACROFT HOSPITAL, York-road. Senior HOUSE OFFICERS required. Salary £670 p.a. Duties will include the Children's and E.N.T. Wards which are in course of development and will ultimately comprise a complete Children's Unit, both medical and surgical.

Immediate application to undersigned, stating names of 2 referees. S. C. EDWARDS, Chief Administrative Officer.
Seacroft Hospital, Leeds.

LEEDS. JEWISH HERZL MOSER HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER at above Hospital for treatment of both medical and surgical cases. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs—namely, on scale £700–£50–£1000, according to previous service in the grade, with an appropriate deduction for services provided. Self-contained flat available suitable for a married or single person. Appointment for 1 year in the first instance.

Forms of application, obtainable from undersigned, should be completed and returned by 16th December, 1950.
J. FOLKARD, Secretary,
Leeds A Group Hospital Management Committee.
Administrative Offices, St. James's Hospital, Leeds 9.

LIVERPOOL, 15. SEFTON GENERAL HOSPITAL. (997 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON (resident) for above-named Hospital. Appointment for period ending 31st March, 1951. Terms and conditions of service in accordance with the regulations of the Ministry of Health.

Applications, stating age, qualifications with dates, and details of experience, with copies of 1–3 recent testimonials should be sent as soon as possible to—
GARNET CHAPLIN, Secretary,
South Liverpool Hospital Management Committee

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Required, OTORHINOLARYNGOLOGICAL REGISTRAR for period from 1st February–30th September, 1951. Post will be assessed in the Senior Registrar or Registrar grade according to qualifications and experience, and appointment subject to National Health Service superannuation regulations.

Applications, stating age, qualifications, and details of present and previous appointments with dates, with names of 3 persons to whom reference may be made, should be sent to reach undersigned by 8th December, 1950.

A. V. J. HINDS, Secretary,
The United Liverpool Hospitals.

80, Rodney-street, Liverpool, 1, 15th November, 1950.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Required, RESIDENT HOUSE SURGEON at the David Lewis Northern Hospital for period to 31st March, 1951. Salary £350, £400, or £450 p.a. according to experience, less a deduction at rate of £100 p.a. for board and residence, in accordance with agreed terms and conditions of service (House Officers). Appointment subject to National Health Service superannuation regulations.

Applications, with full details, should be sent at once to—

A. V. J. HINDS, Secretary,
The United Liverpool Hospitals.

80, Rodney-street, Liverpool, 1, 14th November, 1950.

LIVERPOOL, 20. BOOTLE GENERAL HOSPITAL. Required, HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Applications, on forms obtainable from undersigned, should be made as soon as possible.

F. J. WATKINS, Secretary to the Committee.

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Required, HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 residential emoluments.

Applications, stating age, qualifications, and experience, should be forwarded, with copies of 3 recent testimonials, to—

R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Required, HOUSE OFFICER for Orthopædic and Fracture Department, at above Hospital. 6 months' appointment. Salary £350–£450 p.a., less £100 residential emoluments, according to experience.

Applications, stating age, qualifications, and experience, should be forwarded to undersigned, together with copies of 3 recent testimonials. R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, nationality, with 3 recent testimonials, to the Secretary, Lowestoft and North Suffolk Hospital, Lowestoft.

MANSFIELD AND DISTRICT GENERAL HOSPITAL. (250 Beds.) Required, SENIOR HOUSE SURGEON. Duties principally in connection with accident and orthopædic services, but appointee will also be required to act as Deputy to the R.S.O. Salary £400–£450 p.a., less £100 in respect of residential emoluments, in accordance with terms and conditions issued by the Ministry of Health.

Applications, stating age, qualifications, with copies of 2 recent testimonials, to be forwarded immediately to—

A. ASHWORTH, Secretary,
Mansfield Hospital Management Committee.

MORECAMBE. QUEEN VICTORIA HOSPITAL. (100 Beds.) Required, RESIDENT CASUALTY OFFICER, post vacant now. Post is full-time, and for 6 months. Terms and conditions of service are those laid down by the Ministry of Health for hospital medical and dental staffs. Salary scale £350–£450 p.a., according to experience.

Applications, stating age, qualifications, experience, and nationality, with names of 2 referees, should be forwarded immediately to the Secretary, Lancaster and Kendal Hospital Management Committee, Royal Lancaster Infirmary, Lancaster.

MANCHESTER. BAGULEY HOSPITAL, Wythenshawe. (420 Beds.) Required, RESIDENT JUNIOR MEDICAL REGISTRAR at above Hospital. Salary £670 p.a., deduction in respect of residential emoluments. Ministry of Health conditions of service for hospital medical staff. The Hospital comprises 420 Beds for the treatment of pulmonary tuberculosis and is the Regional Centre for major thoracic surgery. Extended outpatient facilities contemplated. Opportunity for postgraduate study.

Applications, stating age, qualifications, and experience, and names of 2 referees, to be forwarded to undersigned by 5th December, 1950.

A. H. KEATES, Secretary,
South Manchester Hospital Management Committee.
Christie Hospital and Holt Radium Institute,
Manchester, 20.

MANCHESTER NORTHERN HOSPITAL. (General Hospital—116 Beds.) Required, RESIDENT SURGICAL OFFICER (Junior Registrar grade) at above Hospital. Position vacant from 1st January, 1951, and is tenable for 1 year. Salary in accordance with terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, nationality, qualifications with dates, previous appointments with dates, with names and addresses of 2 referees, to be sent as soon as possible to—

A. T. SAMPSON, Secretary,
North Manchester Hospital Management Committee.
Crumpsall Hospital, Manchester, 8.

MANCHESTER UNITED HOSPITALS. Manchester ROYAL EYE HOSPITAL. Required, HOUSE SURGEON. Salary £350–£450 p.a., according to the number of positions previously held, less £100 p.a. for residential emoluments. Appointment of a practitioner within 3 months of qualification and subject to National Service Acts would be limited to 6 months.

Applications, stating age, details of qualifications, and experience, and nationality, should be forwarded immediately to H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Required, HOUSE PHYSICIAN (Male or Female), to the University Department of Child Health at Saint Mary's Hospitals, Manchester, for 6 months, commencing as soon as possible. Previous pædiatric experience essential. Duties include the care of the newborn in the Maternity Department, the care of infants in the Infants' Ward and work in the Clinics under the charge of the Department of Child Health. Salary in accordance with national scale.

Application forms may be obtained from undersigned, and completed form to be received on or before 30th November, 1950. A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for RESIDENT SURGICAL REGISTRAR posts at :—

(*a*) Hope Hospital, Salford.
(*b*) Royal Infirmary, Lancaster.

Appointments will be made in the first instance for 1 year at a salary of £775 p.a., subject to renewal for a second year at the discretion of the Board. Applicants must have been qualified at least 2 years and must have held previous surgical posts. A higher qualification in surgery is desirable. National terms and conditions of service are applicable and the posts are superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify. J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of MEDICAL REGISTRAR, General Medical Division, Bolton and District Hospitals (Bolton Royal Infirmary and Townleys Hospital, Bolton). Appointee required to reside at Townleys Hospital. Appointment will be made in the first instance for one year at a salary of £775 p.a. and subject to renewal for a second year at the discretion of the Board. A higher qualification is desirable. Applicants must have been qualified at least 2 years. National terms and conditions of service applicable and the post superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify. J. GIBBON, Secretary of the Board.

MACCLESFIELD HOSPITAL. West Park and Infirmary BRANCHES. Applications invited for following House Officer posts :—

RESIDENT HOUSE PHYSICIAN.
RESIDENT HOUSE SURGEON.
GENERAL DUTY HOUSEMAN to be employed in Anæsthetics, Ophthalmology, E.N.T., &c.

Salary and conditions of service in accordance with the terms and conditions of service for hospital medical and dental staffs —£350–£450 p.a., according to experience, less a charge of £100 p.a. for services provided by the Hospital. Each department is under the control of Consultant staff.

Applications, stating age, qualifications, and experience, with names of 2 referees to be forwarded as soon as possible to—

G. P. SIGGINS, Secretary, Macclesfield and
District Hospital Management Committee.

Macclesfield Hospital, West Park Branch, Macclesfield.

MAIDENHEAD HOSPITAL, St. Lukes-road, Maidenhead, BERKS. Required, HOUSE SURGEON, post vacant early December. Salary £350–£450 p.a., according to previous experience, less £100 residential emoluments.

Applications, giving details of age, experience, and qualifications with dates, with copies of 2 testimonials, should be forwarded to the Administrative Officer.

NOTTINGHAM CITY HOSPITAL. (856 Beds.) Notting-HAM NO. 2 HOSPITAL MANAGEMENT COMMITTEE. Required, OBSTETRIC HOUSE SURGEON, post vacant 13th December, 1950. Appointment for 6 months. Salary within scale £350–£450 p.a., less £100 p.a. for board and lodging.

Applications, stating age, nationality, qualifications, and experience, with copies of 1–3 testimonials, to be sent immediately to the Administrative Officer, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Required, RESIDENT JUNIOR ANÆSTHETIC REGISTRAR (Male or Female). Duties to commence 1st January, 1951. The terms and conditions of service for hospital medical staff will apply.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent as soon as possible to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, JUNIOR AURAL REGISTRAR (resident), duties to commence immediately. Salary and conditions of service to be in accordance with the published conditions of the National Health Service. The E.N.T. Department has 53 Beds and a large Outpatient Department and is recognised for the D.L.O.

Applications to be addressed to undersigned, stating age, qualifications, and experience, with copies of testimonials.

HENRY M. STANLEY, Secretary,
Nottingham Area No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Ear, Nose, and THROAT DEPARTMENT. Required, AURAL HOUSE SURGEON (first post), Male or Female. Duties to commence as soon as possible. Salary and conditions of service in accordance with the published conditions of the Ministry of Health. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for 6 months.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM CHILDREN'S HOSPITAL, Chestnut-grove, NOTTINGHAM. (134 Beds.) Applications invited for following appointments :—

HOUSE SURGEON. HOUSE PHYSICIAN.

Salary in accordance with national scale—i.e., £350, £400, or £450, less £100 for residential emoluments. Hospital is recognised by the Conjoint Board for D.C.H.

Applications, stating age, qualifications, and nationality, with 2 testimonials, to be sent to Administrative Assistant, Children's Hospital, Nottingham.

J. H. HARGREAVES, Secretary,
Nottingham No. 2 Hospital Management Committee.

NORWICH. NORFOLK AND NORWICH HOSPITAL. (440 Beds.) Required, SENIOR CASUALTY OFFICER (Junior Registrar status). Salary £670 p.a., less £100 p.a. for full residential emoluments.

Applications, stating age, qualifications, experience, with names of 2 referees, to Secretary, Norwich, Lowestoft and Great Yarmouth Hospital Management Committee, St. Stephen's-road, Norwich.

NEATH GENERAL HOSPITAL, Neath. (408 Beds.) Applications invited from registered medical practitioners for following posts :—

HOUSE PHYSICIAN (general medicine).
HOUSE SURGEONS (general surgery).

Appointments of 6 months' duration. Salaries £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and giving names of 2 referees, should be addressed to the Secretary, Mid Glamorgan Hospital Management Committee, 8, Wind-street, Neath, as soon as possible.

NEWPORT, MON. ST. WOOLOS HOSPITAL. (379 Beds.) Required, HOUSE OFFICERS (medical). There are 2 appointments with different Consultants, 1 vacant 12th December and the other 10th January. Salary £350–£450 p.a. in accordance with number of previous posts held, less £100 for full residential emoluments.

Apply, with names of 2 persons, for reference to—
17, Cardiff-road, Newport. T. A. JONES, Secretary.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (259 Beds.) Applications invited for following appointments :—

HOUSE OFFICER (medical).
HOUSE OFFICER (orthopædic). Post is recognised for the Fellowship of the Royal College of Surgeons.
HOUSE OFFICER (E.N.T. and ophthalmic). Post is recognised for the D.L.O.

Salary £350–£450 p.a., in accordance with number of previous posts held, less £100 for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

NEWPORT, I.W. ST. MARY'S HOSPITAL. House SURGEON, vacant 3rd December, 1950. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

NEWPORT, I.W. ST. MARY'S HOSPITAL. House PHYSICIAN, vacant 3rd December, 1950. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Required, JUNIOR REGISTRAR to the Gynæcological Department of the Royal Victoria Infirmary. This is the Teaching Hospital of the University of Durham and successful candidate will have opportunity for clinical experience in inpatient and outpatient work under the direction of the head of the department. He will also be responsible for clinical emergency duty as required. Appointment, which is non-resident, is for 1 year from 1st January, 1951, and subject to Ministry of Health terms and conditions of service. Salary £670 p.a.

Applications, giving age, nationality, experience, and qualifications, with names and addresses of 3 referees, should be sent within 2 weeks of appearance of this advertisement to—

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

PORTSMOUTH. SAINT MARY'S HOSPITAL. (1100 Beds.) PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

JUNIOR REGISTRAR (Casualty Officer), resident. Post for 1 year and subject to the terms of service for hospital medical staff. Salary £670 p.a., less residential emoluments. Applications are invited from R practitioners who have held 2 posts.

HOUSE SURGEON (resident) and HOUSE PHYSICIAN (resident). Posts tenable for 6 months. Salary in accordance with terms of service for hospital medical staff. R practitioners within 3 months of qualification and liable under National Service Acts may apply.

Applications, stating age, experience, and qualifications, and names of 3 referees, should be sent to the Medical Superintendent, Saint Mary's Hospital, Portsmouth.

OXFORD. UNITED OXFORD HOSPITALS. Required, REGISTRAR to the Accident Department of the Radcliffe Infirmary, Oxford. Possession of F.R.C.S. desirable. Post will be whole-time and in accordance with the national terms and conditions of service, and will be held for 1 year but eligible for extension for a second year.

Applications, with names of 2 referees, on a form to be obtained from the Secretary, Registrar Committee, 51, Banbury-road, Oxford, should reach him by 6th December.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications invited for following appointments, resident unless otherwise stated, which fall vacant 1st February, 1951 :—

At the Radcliffe Infirmary
3 GENERAL HOUSE PHYSICIANS.
*3 GENERAL HOUSE SURGEONS.
PÆDIATRIC HOUSE PHYSICIAN.
2 ACCIDENT SERVICE HOUSE SURGEONS.
EMERGENCY OFFICER.
*OBSTETRIC HOUSE PHYSICIAN to Nuffield Professor.
*GYNÆCOLOGICAL HOUSE SURGEON to Nuffield Professor, from 1st January, 1951.
JUNIOR PATHOLOGIST (non-resident).

At the Churchill Hospital
*OBSTETRIC HOUSE PHYSICIAN.
PÆDIATRIC HOUSE PHYSICIAN.
*HOUSE SURGEON.
PLASTIC UNIT HOUSE SURGEON.
JUNIOR PATHOLOGIST.

At the Cowley Road Hospital
GERIATRIC UNIT HOUSE PHYSICIAN.

*Recognised by the appropriate Royal College for diploma examination.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be addressed to undersigned to arrive by 1st December, 1950. A. G. E. SANCTUARY, Administrator.
The Radcliffe Infirmary, Oxford.

ORPINGTON HOSPITAL. Required, Senior House OFFICER (resident) to the Geriatric Unit at above Hospital. The department (which includes a long-stay annexe) has 300 Beds and offers excellent clinical experience in diagnosis and treatment of acute and chronic medical cases. Salary £670 p.a., with conditions of service in accordance with Ministry of Health regulations. A charge of £150 p.a. made for full residential emoluments.

Apply, with full details including names of 3 referees, by 18th December, 1950, to Secretary, Orpington and Sevenoaks Hospital Management Committee, Orpington Hospital, Orpington, Kent.

OSWESTRY. THE ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL, GROUP 27, BIRMINGHAM REGION. Required, JUNIOR SURGICAL REGISTRAR (resident), post vacant 1st January, 1951. Salary and conditions of service in accordance with the National Health Service regulations. Appointment in the first place for 6 months, with the possibility of extension.

Applications, with copies of 2 recent testimonials, to be sent by 30th November, to Mr. JOHN C. MENZIES, Secretary.

PONTEFRACT. WARDE-ALDAM HOSPITAL, South ELMSALL, near PONTEFRACT. RESIDENT SURGICAL OFFICER (Junior Registrar) required. Salary £670 p.a. A detached residence is available for a married Man, on terms to be agreed.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be sent to—

W. BOWRING, Secretary, Pontefract and Castleford Hospital Management Committee.
Southgate, Pontefract.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications invited from registered medical practitioners for appointments of :—

(1) HOUSE SURGEONS (first post), Greenbank-road Section, vacant 1st and 7th February, 1951.
(2) HOUSE SURGEON (second and third post), Freedom Fields Section, vacant 22nd December, 1950.
(3) HOUSE SURGEONS (first, second, or third post), Devonport Section, vacant immediately.
(4) HOUSE PHYSICIANS (first post), Freedom Fields Section, vacant 14th December, also 17th January, 1951.

Appointments for 6 months and terminable by 1 month's notice on either side. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with 3 recent testimonials, to be sent by 12th December, 1950, to—

ARTHUR R. CASH, Secretary, Plymouth, South Devon, and East Cornwall General Hospital Group.
c/o South Devon and East Cornwall Hospital,
Greenbank-road, Plymouth.

POOLE GENERAL HOSPITAL, Poole, Dorset. (184 Beds.) Required, HOUSE SURGEON, post now vacant. Conditions of service in accordance with national agreements and salary £350 p.a. with a deduction of £100 for full residential emoluments. The Hospital is recognised by the Royal College of Surgeons.

Applications to be forwarded to the Secretary of the Hospital.

RENFREWSHIRE MENTAL HOSPITAL BOARD. Applications invited for post of RESIDENT HOUSE OFFICER at each of the following hospitals :—

Dykebar Mental Hospital, Paisley.
Riccartsbar Mental Hospital, Paisley.
Ravenscraig Mental Hospital, Greenock.

Each post is tenable for 6 months in the first instance. Salary £350–£450 p.a., according to experience, less deduction of £100 for board, lodging, &c. Appointments subject to National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, experience, and present appointment, and giving names of 3 referees, should be sent at once to the Secretary, Dykebar Hospital, Paisley.

READING. ROYAL BERKSHIRE AND BATTLE HOSPITALS. Required, RESIDENT JUNIOR REGISTRAR (Male) to the Accident and Orthopædic Departments of above Hospitals, post vacant 18th December, 1950. Duties will include work in the Casualty Departments. Salary £670, less £100 for board-residence. Appointment subject to terms and conditions of service as published by the Ministry of Health.

Applications, stating age, nationality, qualifications with dates, previous experience, with names of 2 referees, should be sent to the Chief Administrative Officer, Reading and District Hospital Management Committee, 3, Craven-road, Reading, Berks, immediately.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (91 Beds.) Required, HOUSE OFFICER (general surgery), Male, post now vacant. Resident post tenable for 6 months. Salary, &c., as per Ministry of Health scale for House Officers according to previous posts held, less £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications with dates, and experience, with copies of 2 testimonials of recent date or names of 2 referees, to be forwarded immediately to the Secretary, Romford Group Hospital Management Committee at Oldchurch Hospital, Romford.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (91 Beds.) Required, RESIDENT HOUSE PHYSICIAN (Male). Tenable for 6 months. Post offers varied experience not only in medicine but also surgery and gynæcology. Salary, &c., as per Ministry of Health scale for House Officers according to previous posts held, less £100 a year for board and lodging, &c.

Applications, stating age, qualifications with dates, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, at Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Required, 2 RESIDENT HOUSE PHYSICIANS. Posts tenable for 6 months and vacant 28th December, 1950, and 5th January, 1951, respectively. Salary, &c., as per Ministry of Health scale for House Officers according to previous posts held, less £100 a year for board and lodging, &c.

Applications, stating age, nationality, qualifications with dates, present appointment, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should be addressed immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

RYDE, I.W. ROYAL ISLE OF WIGHT COUNTY HOSPITAL. HOUSE SURGEON. Post recognised for F.R.C.S., vacant 5th December, 1950. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (572 Beds.) SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON (House Officer grade). Appointment for 6 months and vacant 18th December. The work is principally in connection with orthopædic and fracture cases and includes other general surgical duties. Salary according to previous appointments held.

Applications, stating age, qualifications with dates, experience, &c., with copies of 2 recent testimonials, should be addressed to undersigned at the Hospital by 2nd December, 1950.

J. C. FIELD, Secretary.

ROTHERHAM. DONCASTER GATE HOSPITAL (151 Beds), AND ROSEHILL ANNEXE, RAWMARSH (20 Beds). RESIDENT HOUSE SURGEON required at above Hospital, tenable for 6 months in the first instance. Salary £400–£500 p.a., according to experience, less £100 p.a. for residential emoluments (rate of salary approved by the Ministry of Health for this Hospital).

Applications, stating age, qualifications, experience, and nationality, with names of 3 referees, to be addressed to the Secretary to the Management Committee, "Fern Bank," Doncaster-road, Rotherham, Yorks, as soon as possible.

ROCHDALE. BIRCH HILL HOSPITAL. (General—956 Beds.) Required, JUNIOR MEDICAL REGISTRAR, post vacant in early January, 1951. Appointment for 1 year. Remuneration £670 p.a. and conditions of service in accordance with the terms of service for hospital medical staff in the National Health Service.

Applications should be sent immediately to—

S. HODKINSON, Secretary,
Rochdale and District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE. BIRCH HILL HOSPITAL. (General—956 Beds.) Required, JUNIOR REGISTRAR (anæsthetic), post vacant end of December. Appointment for 1 year. Remuneration £670 p.a. and conditions of service in accordance with the terms of service for hospital medical staff in the National Health Service.

Applications should be sent immediately to—

S. HODKINSON, Secretary,
Rochdale and District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE INFIRMARY. (General—109 Beds.) Required, CASUALTY HOUSE SURGEON. Appointment for 6 months. Salary in accordance with the terms of service for hospital medical staff in the National Health Service—i.e., £350, £400, or £450 p.a. according to previous experience. Appointment is recognised by the Royal College of Surgeons for 6 of the 12 months' period of surgical training required of candidates for the final fellowship examinations.

Applications should be sent immediately to—

S. HODKINSON, Secretary,
Rochdale and District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE INFIRMARY. (General—109 Beds.) Required, HOUSE PHYSICIAN. Appointment for 6 months. Salary in accordance with the terms of service for hospital medical staff in the National Health Service—i.e., £350, £400, or £450 p.a. according to experience. R practitioners within 3 months of qualification may apply.

Applications should be sent immediately to—

S. HODKINSON, Secretary,
Rochdale and District Hospital Management Committee.
Central Offices, Birch Hill Hospital, Rochdale, Lancs.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications invited for appointments of REGISTRARS (Intermediate and Junior grades) in general surgery as follows :—

3 at Western Infirmary, Glasgow—Office : 10, Park-circus, Glasgow, C.3.
2 at Royal Infirmary, Glasgow—Office : 135, Buchanan-street, Glasgow, C.1.
1 at Royal Hospital for Sick Children—Office : 86, St. Vincent-street, Glasgow.
1 for Glasgow Northern Hospitals—Office : 133, Balornock-road, Glasgow, N.
1 for Greenock and District Hospitals—Office : Royal Infirmary, Duncan-street, Greenock.
2 for Ayrshire Hospitals—Office : Ayr County Hospital, Ayr.

While these vacancies are primarily intended for Junior Registrars, one or more of the vacancies available in the Western Infirmary and Royal Infirmary and the vacancy at the Royal Hospital for Sick Children, may be offered to candidates whose experience would entitle them to Intermediate Registrar grading and, subject to approval by the Regional Board, such candidate would be graded accordingly. All appointments for 1 year in the first instance and subject to National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, and present appointment, and giving names of 3 referees, should be submitted by 9th December, 1950, to the Secretary of the Board of Management concerned at the appropriate office address as indicated above.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications invited for appointments of REGISTRARS (Intermediate and Junior grades) in general medicine as follows :—

1 at Western Infirmary, Glasgow—Office : 10, Park-circus, Glasgow, C.3.
4 at Royal Infirmary, Glasgow—Office : 135, Buchanan-street, Glasgow, C.1.
1 at Stobhill Hospital, Glasgow—Office : 133, Balornock-road, Glasgow, N.
3 at Victoria Infirmary, Glasgow—Office : 40, St. Vincent-place, Glasgow.

While these vacancies are primarily intended for Junior Registrars, one or more of the vacancies available in the Royal Infirmary and Victoria Infirmary may be offered to candidates whose experience would entitle them to Intermediate Registrar grading and, subject to approval by the Regional Board, such candidate would be graded accordingly. All appointments for 1 year in the first instance and subject to National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, and present appointment, and giving names of 3 referees, should be submitted by 9th December, 1950, to the Secretary of the Board of Management concerned at the appropriate office address as indicated above.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications invited for appointments of REGISTRARS (Intermediate and Junior grades) in orthopædics as follows :—

1 at Western Infirmary, Glasgow—Office : 10, Park-circus, Glasgow, C.3.
3 at Royal Infirmary, Glasgow—Office : 135, Buchanan-street, Glasgow.
1 at Victoria Infirmary, Glasgow—Office : 40, St. Vincent-place, Glasgow, C.1.
1 at Stirling and Clackmannan Hospitals—Office : 1, Randolph-road, Stirling.
1 for Ayrshire Hospitals—Office : Ayr County Hospital, Ayr.

While these vacancies are primarily intended for Junior Registrars, one or more of the vacancies available in the Royal Infirmary may be offered to candidates whose experience would entitle them to Intermediate Registrar grading and, subject to approval by the Regional Board, such candidate would be graded accordingly. All appointments for one year in the first instance and subject to National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, and present appointment, and giving names of 3 referees, should be submitted by 9th December, 1950, to the Secretary of the Board of Management concerned at the appropriate office address as indicated above.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Required, ORTHOPÆDIC REGISTRAR. Post is whole-time and will be in the Senior Registrar or Registrar grade according to the qualifications and experience of the candidates. A higher qualification in surgery and previous experience in orthopædic surgery are desirable. Main duties are at Raigmore Hospital, Inverness. Single quarters are available.

Forms of application and further particulars obtainable from undersigned, with whom applications should be lodged by 4th December, 1950. A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore Hospital, Inverness.

SCARBOROUGH HOSPITAL, Yorkshire. (163 Beds.) Required, RESIDENT HOUSE SURGEON (surgical), Male or Female. Salary in accordance with national scale and appointment for 6 months.

Applications, stating age, and qualifications, with testimonials, to be sent to the Secretary.

SALISBURY GENERAL INFIRMARY. Required, Resident CASUALTY OFFICER (Junior Registrar). Salary and conditions of service in accordance with the terms for medical staff in hospitals. Appointment vacant 30th December, 1950, and is for 12 months.

Applications, with names of 2 referees, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, to be received by 5th December, 1950.

SALISBURY GENERAL HOSPITAL (Salisbury Infirmary and Odstock Hospital). (470 Beds.) Required, RESIDENT HOUSE SURGEON to the E.N.T. Department, which consists of 40 Beds together with busy Outpatient and Audiometric Clinics. Appointment now vacant and for 6 months. Salary and conditions of service in accordance with the terms for medical staff in hospitals.

Applications, with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, by 9th December, 1950.

SALISBURY GENERAL HOSPITAL (incorporating Salisbury General Infirmary and Odstock Hospital). Required, RESIDENT HOUSE SURGEON to the Gynæcological Department. Salary and conditions of service in accordance with the National Health Service terms. Appointment for 6 months and duties to commence 17th December, 1950.

Applications, with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, immediately.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Required, NON-RESIDENT SENIOR REGISTRAR or REGISTRAR in Clinical Pathology at above Hospital. Previous experience in hæmatology and blood transfusion is desirable.

Applications, stating age, qualifications, and experience, with names of 3 referees, to be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer,
The United Sheffield Hospitals.

Central Office, The Royal Hospital, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. THE CHILDREN'S HOSPITAL UNIT, Western Bank, SHEFFIELD, 10. Required, HOUSE PHYSICIAN for the Professorial Unit to commence duty about mid-January. Salary £350–£450 p.a., according to experience.

Applications to be received within 10 days of appearance of this advertisement by the Superintendent.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Required, NON-RESIDENT JUNIOR REGISTRAR to the Orthopædic Department.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer,
The United Sheffield Hospitals.

Central Office, Royal Hospital, Sheffield, 1.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for F.R.C.S. England.) Required, RESIDENT HOUSE SURGEON (orthopædics), post vacant 1st December, 1950. After 6 months' service candidates will be eligible, if so desired, to obtain resident posts as House Surgeon, House Physician, or House Surgeon (obstetrics and gynæcology).

Forms of application may be obtained from undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary,
Sheffield No. 1 Hospital Management Committee.

SHEFFIELD. CITY GENERAL HOSPITAL. Required, RESIDENT HOUSE PHYSICIAN, post vacant 1st December, 1950.

Forms of application may be obtained from undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary,
Sheffield No. 1 Hospital Management Committee.

SHEFFIELD CENTRE FOR RHEUMATISM RESEARCH, NETHER EDGE HOSPITAL. Required, HOUSE PHYSICIAN. Main duties in connection with above Unit (30 Beds) but appointee may also be required to assist as necessary on chronic sick and maternity wards.

Forms of application may be obtained from undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary,
Sheffield No. 1 Hospital Management Committee.

SOUTHPORT GENERAL INFIRMARY. Resident House PHYSICIAN. Appointment tenable for 6 months and falls vacant in November. Salary £350–£450, according to experience, less £100 in respect of emoluments.

Applications, stating age, qualifications, nationality, with names of 2 referees, should be forwarded immediately to—

T. CROOK, Secretary, Southport and
District Hospital Management Committee.

Promenade Hospital, Southport.

SOUTHAMPTON BOROUGH GENERAL HOSPITAL. HOUSE SURGEON (resident) required immediately. Post tenable for 6 months. Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON INFECTIOUS DISEASES HOSPITAL AND SANATORIUM. HOUSE OFFICER (Male or Female) required at end of the year. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments. Terms and conditions of service in accordance with those nationally advocated.

Applications, with copies of references, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) HOUSE SURGEON required, resident, vacancy mid-December. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by Ministry of Health.

Applications, with copies of testimonials, to be submitted immediately to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON (resident), post vacant 31st December, 1950. Tenable for 6 months. This Hospital provides a comprehensive orthopædic service and is the centre to which all trauma from a large industrial town and port is directed. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER (Male or Female), vacant immediately. Salary £350–£450 p.a., less a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Secretary.

Royal Salop Infirmary, Shrewsbury, 23rd September, 1950.

SOUTHEND-ON-SEA GENERAL HOSPITAL, Prittlewell Chase, SOUTHEND-ON-SEA. HOUSE SURGEON (House Officer grade) required for duties in Special Departments (Eyes and E.N.T.). Salary according to previous appointments held, less deduction for board.

Applications, with details of qualifications, &c., with copies of recent testimonials, to reach undersigned at the Hospital by 9th December, 1950. J. C. FIELD, Secretary.

SKIPTON GENERAL HOSPITAL, Skipton, Yorkshire, WEST RIDING. (General Hospital of 64 Beds—Visiting Consultant Staff.) Required, HOUSE SURGEON, either sex, post now vacant. 6 months' appointment. Salary £400 or £450 a year, according to experience. National Health Service terms and conditions.

Applications, stating age, qualifications, experience, and nationality, with copies of recent testimonials, to be forwarded as soon as possible, to the Secretary, Bingley, Keighley, Skipton and Settle Hospital Management Committee, St. John's Hospital, Fell-lane, Keighley.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. Required, HOUSE SURGEON (Male or Female), post vacant 16th December. Salary £350 p.a., less £100 p.a. for residential emoluments.

Applications, giving particulars as to age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded immediately to—

H. H. JONES, Secretary,
Stafford Hospital Management Committee.

13, Foregate-street, Stafford.

STOKE-ON-TRENT. NORTH STAFFS ROYAL INFIRMARY. (475 Beds.) Required, HOUSE OFFICER (E.N.T.), Male or Female, second or third House Officer post. Duties to commence as soon as possible. Post recognised for D.L.O. and F.R.C.S.Eng. Large department : 32 Beds, about 5000 outpatients and 1000 inpatients per year. Salary in accordance with national scale. Appointment for 6 months renewable.

Apply, with copy testimonials, stating age, nationality, and details of previous service, including National Service, to—

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFS ROYAL INFIRMARY. (475 Beds.) Applications invited for following posts :—

(*a*) HOUSE OFFICER (medical and dermatology), second post, Male or Female, post vacant 21st December.

(*b*) HOUSE OFFICER (surgical), first post, Male or Female, post vacant 31st December.

Salary in accordance with national scale.

Applications, stating age, nationality, and details of previous service, including National Service, with copy testimonials should be addressed to—

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Required, RESIDENT HOUSE OFFICER (medical), Male or Female, post vacant in the near future. Salary in accordance with national scale for house officers. Appointment for 6 months in the first instance. Applications from recently qualified medical practitioners will be considered.

Applications, giving age, qualifications, and particulars of previous experience, including National Service, if any, with copies of 3 recent testimonials, should be forwarded to the Medical Superintendent, City General Hospital, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

ST. HELENS HOSPITAL. (183 Beds.) Required, Resident HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Applications to be forwarded as soon as possible to—

N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, Prescot, Lancs.

ST. HELENS HOSPITAL. (183 Beds.) Required, Resident ANÆSTHETIST AND CASUALTY OFFICER. Salary £400–£450, less £100 p.a. for residential emoluments. The St. Helens Hospital, comprising 183 Beds, has 6 resident Medical Officers and a full staff of Visiting Consultants. The work is mainly of a surgical nature and includes obstetrics, gynæcology, E.N.T., and orthopædics.

Applications to be forwarded as soon as possible to—

N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

ST. ALBANS CITY HOSPITAL. Required, Casualty OFFICER (Male). *Appointment for 6 months in the first instance. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications should be addressed to the Secretary, Osterhills, Normandy-road, St. Albans.

ST. ALBANS CITY HOSPITAL. Required, House PHYSICIAN (first or second post) at above Hospital, post vacant December, 1950. Duties mainly in the Pædiatric Department, but there will also be some duties in the General Medical Department. Salary in accordance with the terms and conditions of hospital medical and dental staffs (England and Wales).

Applications, stating age and experience, with copies of recent testimonials, to be forwarded to the Secretary, Osterhills, Normandy-road, St. Albans.

STAMFORD AND RUTLAND HOSPITAL. (105 Beds.) JUNIOR REGISTRAR IN SURGERY (resident). Commencing salary £670 p.a., less £140 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and nationality, with names of 3 referees, to be addressed to the Secretary, Stamford and Rutland Hospital, Stamford, Lincs.

STAMFORD AND RUTLAND HOSPITAL. (105 Beds.) Required, HOUSE OFFICER (surgical). Salary £350–£450 p.a., according to number of posts held, from which a deduction at rate of £100 p.a. made in respect of residential emoluments. Appointment starting immediately for 6 months in the first instance.

Applications, stating age, qualifications, nationality, with copies of recent testimonials, should be forwarded to the Secretary, Stamford and Rutland Hospital, Stamford, Lincolnshire.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (second or third appointment) to the Orthopædic Department.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (first or second appointment).

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE PHYSICIAN (first or second appointment).

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON (first or second post) to the E.N.T. Department of above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON (first or second post) at above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

TRURO. ROYAL CORNWALL INFIRMARY. (230 Beds— 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), for General Surgery and Gynæcology, post vacant now. Successful candidate will be responsible jointly with the House Surgeon for the 74 Beds allocated to the 2 specialties. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—230 Beds; 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, CASUALTY HOUSE SURGEON (Male or Female), post vacant 1st November, 1950. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

TAPLOW, MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. ORTHOPÆDIC HOUSE SURGEON required, post vacant 7th February. Salary on national scale.

Applications, giving details of age, qualifications, and experience with dates, with copies of 2 testimonials, to be sent to the Administrative Officer.

TAPLOW, MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required, post vacant early January. Salary on national scale.

Applications, giving details of age, experience, and qualifications with dates, and with copies of 2 testimonials, to be sent to the Administrative Officer.

TRURO. ROYAL CORNWALL INFIRMARY. (230 Beds —7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), in an extremely active general hospital doing major surgery and with busy Outpatient and Casualty Departments, post vacant now. Appointment resident and tenable for 6 months. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

VIRGINIA WATER, SURREY. HOLLOWAY SANA- TORIUM (Mental Hospital). SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GROUP NO. 52 HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER at above Hospital. The Hospital has 500 Beds, an admission rate of 600–700 patients p.a., and an extensive outpatient service and is recognised for training. All modern methods of treatment are in operation. Further inquiries or a preliminary visit to the Hospital are invited. Salary £450 p.a. Previous mental hospital experience is not essential.

Applications, giving names of 2 referees, should reach the Medical Superintendent by 5th December, 1950.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) Required, RESIDENT HOUSE SURGEON at above Hospital. Salary and conditions of service in accordance with national scale and recommendations.

Applications, giving full particulars, with names of 3 referees, should be addressed to—

W. READ, Secretary, Hospital
Management Committee No. 9, Wakefield A Group.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) Required, Locum RESIDENT SURGICAL OFFICER (Registrar grade) at above Hospital, for a period of 1–2 months. Salary and conditions of service in accordance with national scale and recommendations.

Applications, giving full particulars of age, qualifications, and experience, with names of 3 referees, should be addressed immediately to— W. READ, Secretary, Hospital
Management Committee No. 9, Wakefield A Group.

WAKEFIELD. GENERAL HOSPITAL, Park Lodge-lane. (160 Beds.) Required, RESIDENT HOUSE OFFICER for Medical and Pædiatric Units. The Hospital is recognised for D.C.H. Good experience available. Salary £350–£450 p.a. in accordance with grading.

Applications, giving full particulars of age, and qualifications, should be sent to the Medical Superintendent.

W. READ, Secretary, Hospital
Management Committee No. 9, Wakefield A Group.

WAKEFIELD. THE GENERAL HOSPITAL, Park Lodge-lane. (160 Beds.) Required, HOUSE PHYSICIAN for the Medical Unit and with some anæsthetic duties and to work under the supervision of the Medical Superintendent. Post is resident and salary scale £350–£450 p.a., according to experience, less £100 p.a. for emoluments. Appointment vacant 8th December, 1950.

Applications should be addressed to the Medical Superintendent. W. READ, Secretary, Hospital
Management Committee No. 9, Wakefield A Group.

WHISTON. COUNTY HOSPITAL. (880 Beds.) Required, CASUALTY AND ADMISSION OFFICER (resident or non-resident). 6 months' appointment. Salary £400–£450, according to experience, less £100 for residential emoluments.

Applications to be forwarded as soon as possible to—

N. RICHARDS, Secretary,
St. Helens and District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS- PITAL. WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Senior Surgeon, vacant 1st January, 1951. Salary £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS- PITAL. WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required, vacant 1st January, 1951. Salary £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

WORKSOP, NOTTS. VICTORIA HOSPITAL. (127 Beds.) CASUALTY OFFICER required to commence duties as soon as possible. Salary £350–£450 p.a., according to number of posts held. A deduction of £100 p.a. made in respect of residential emoluments. Appointment for 6 months in the first instance.

Applications, stating age, qualifications, nationality, with copies of recent testimonials, to be forwarded to Secretary, Worksop and Retford Hospital Management Committee, Victoria Hospital, Worksop.

WORCESTER ROYAL INFIRMARY. (300 Beds.) Applications invited for following appointments :—

HOUSE SURGEON (general surgery, obstetrics, and gynæcology), now vacant.
HOUSE SURGEON (general surgery), vacant 8th December.
HOUSE SURGEON (E.N.T.), now vacant.

Applications, with full details and copies of testimonials, should be sent to the Secretary, South Worcestershire Hospital Management Committee.

WORCESTER ROYAL INFIRMARY. (General Hospital with 300 Beds.) HOUSE PHYSICIAN required as from 19th December, 1950, to work with General Physician who has charge of 15 acute general medical beds and of the Cardiological Department and with the Pædiatrician in charge of 23 Beds in a recently opened Children's Block.

Applications, with testimonials, should be forwarded to the House Governor by 30th November, 1950.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE, GROUP NO. 16, BIRMINGHAM REGION. Applications invited from registered medical practitioners for following appointments :—

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

JUNIOR CASUALTY OFFICER, vacant now.

HOUSE SURGEON (Fracture and Orthopædic Department), vacant now.

HOUSE SURGEON (Ear, Throat and Nose Department), vacant 31st December.

REGISTRAR (Fracture and Orthopædic Department), vacant 24th December.

All appointments subject to terms and conditions of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.

The Royal Hospital, Wolverhampton.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) Required, HOUSE PHYSICIAN at above Hospital. Appointment for 6 months and will commence 1st December, 1950. Salary £350–£450 p.a., according to experience, less £100 for full residential accommodation.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be addressed to the Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM AND EAST DENBIGHSHIRE WAR MEMORIAL HOSPITAL. (170 Beds.) Required, 2 HOUSE SURGEONS at above Hospital to commence 1st December, 1950. Salary £350, £400, or £450 p.a., according to experience, less £100 p.a. for full residential emoluments.

Applications, giving age, nationality, qualifications, and experience, with copies of 2 recent testimonials, should be addressed to the Secretary, Wrexham, Powys, and Mawddach Hospital Management Committee, Maelor General Hospital, Croesnewydd-road, Wrexham.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for following posts :—

Maternity Hospital, York (44 Beds)

RESIDENT OBSTETRIC HOUSE SURGEON. There are 2 House Surgeons at the Maternity Hospital and appointment will be as Junior House Surgeon for the first 3 months and Senior House Surgeon for second 3 months. Previous obstetric experience is desirable but not essential and post is vacant from 6th December, 1950. Post recognised for the Diploma in Obstetrics. Salary £400 p.a. for second post held, £450 for third post, less £100 for residence.

Military Hospital, York (Civilian Wing) (52 Beds)

RESIDENT MEDICAL OFFICER. This Hospital is an Annexe to the County Hospital, York. There are at present 14 gynæcological beds, 28 surgical beds, and 10 medical beds. Appointment for 6 months and is vacant immediately. Salary £350 for first post held, £400 for second post held, £450 for third post held, less £100 for residence.

Applications, giving details of age, nationality, qualifications, and experience, with names of 2 referees, to be forwarded immediately to—

F. A. MILNES, F.H.A., A.L.A.A., Secretary,
York A and Tadcaster Hospital Management Committee.
Bootham Park, York.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications from registered medical practitioners, who intend to specialise in clinical pathology, for a whole-time post as TRAINEE PATHOLOGIST at the Laboratory of the Royal Victoria Hospital, Belfast. Appointment for the period ending 30th September, 1951, in the first instance, and may be made in any of 4 grades—viz., Senior House Officer, Junior, Senior, and Principal Registrar, the analogous grades in Great Britain being Senior House Officer, Junior Registrar, Registrar, and Senior Registrar. Remuneration on following scales : Student Pathologist £450 p.a. ; Junior Registrar £670 p.a. ; Senior Registrar £775 p.a. for first year, £890 p.a. for second year and any subsequent year ; Principal Registrar £1000 p.a. for first year, £1100 p.a. for second year, £1200 p.a. for third year, £1300 p.a. for any subsequent year. Grade in which successful applicant will be appointed will be determined by reference to the experience and qualifications of the applicant and only a person who appears likely to reach Consultant status will be appointed. Where accommodation and/or board are provided in connection with the post a charge to be determined by the Authority will be made. Contributions will be payable under the Health Services superannuation scheme. A successful applicant may in the course of appointment be required to undertake duties at other centres in Northern Ireland and to assist Consultants under the Authority's schemes. It is the Authority's policy to give preference to candidates who have served in H.M. Forces in war-time.

Applications should be made on a form, which may be obtained from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, and which must be returned so as to be received by 9th December, 1950. Canvassing by or on behalf of an applicant will disqualify. Any approach to a member of the Authority by, or at the request of, a candidate for the purpose of obtaining support for his application will be treated as canvassing.

WINDSOR, BERKS. KING EDWARD VII HOSPITAL. HOUSE SURGEON required, post vacant 30th November, 1950. Salary on national scale.

Applications, with copies of recent testimonials, stating age, qualifications with dates, and nationality, to be sent to the Administrative Officer.

WINDSOR, BERKS. KING EDWARD VII HOSPITAL. CASUALTY OFFICER required, post vacant 26th November, 1950. Salary on national scale. Duties include House Surgeon to E.N.T., Eye, and Dental Departments.

Applications, with copies of recent testimonials, stating age, qualifications with dates, and nationality, to be sent to the Administrative Officer.

Public Appointments

COMMONWEALTH OF AUSTRALIA. Department of HEALTH. MEDICAL OFFICER IN CHARGE, Commonwealth Health Laboratory, Kalgoorlie, Western Australia. Salary (Australian currency) : £1050–£1792 p.a. (including cost-of-living adjustment, which is at present at rate of £136 p.a.). Qualifications : Applicants must be medical graduates and should have a knowledge of radiology, particularly of the lungs. Successful applicant will be appointed at a commencing salary commensurate with qualifications and experience. Fares : under certain conditions first-class boat fares (if first-class berths available) for appointee and dependants will be paid by the Commonwealth.

Applications to the Chief Medical Officer, Australia House Strand, W.C.2, by 14th December, 1950.

CIVIL SERVICE COMMISSIONERS invite applications from registered medical practitioners for 2 permanent pensionable posts of PRINCIPAL MEDICAL OFFICER on the staff of the Ministry of Health. Salary scale £1850–£100–£2125 (London), rather less in the provinces. This scale applies to both men and women. These posts will be concerned with the regional work in connection with the Health Services and headquarters will be in London. Candidates must be of high professional standing with organising ability and wide experience of public health administration.

Particulars and application forms from Secretary, Civil Service Commission, 6, Burlington-gardens, London, W.1, quoting no. 3366 ; completed application forms must reach him by 14th December, 1950.

COLONIAL MEDICAL SERVICE. In the larger Colonies MEDICAL OFFICERS are required for general duties, including hospital and district work. These appointments offer great scope for the practice of many branches of medicine and surgery with a considerable measure of independence and personal responsibility. Appointments can be made on a permanent basis with pension (non-contributory) at age 50 or 55, or on a temporary basis with gratuity. Secondment from the National Health Service can usually be arranged for periods up to 6 years with continuation of superannuation contributions and the payment of a resettlement grant on reversion to the National Health Service. Salaries range from £860 to £1630 a year, the starting salary depending upon age and experience. In most territories in Africa the scale for newly appointed doctors with an approved higher qualification is £1050–£1600 a year with a higher point of entry according to experience. There are many specialist and administrative posts with salaries above this scale available for officers in the Service on promotion. Free passages are granted in both directions. Income-tax is very low. Tours of service vary from 10 months in Nigeria to 4 years in Kenya. Houses with heavy furniture are provided in most territories at a rent of about 10% of salary. Annual local leave is available and generous home leave is granted after each tour. Study leave on full pay is available for those who wish to acquire higher qualifications. Social and recreational amenities are good. Officers serving in East and Central Africa usually prefer to educate their children within that area, where schooling is available, or in South Africa. The short tours in West Africa enable frequent visits to be made to children being educated at home. Many officers have their children with them in West Africa until they reach school age.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1. (Ref. no 27215/14.)

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Positions vacant : THORACIC SURGEONS. (*a*) Thoracic Surgeon, Galway County Council, and (*b*) Thoracic Surgeon, Cork County Council. Salary (for each post) : £1500 a year with permission to engage in limited private practice. Essential qualifications for both posts include : (i) at least 5 years' experience in the practice of the medical profession, at least 3 of which have been devoted to surgical work, including major operations, (ii) M.Ch. degree or Fellowship of Royal College of Surgeons, or equivalent, (iii) evidence of having specialised in thoracic surgery. Minimum age limit : 30 years.

Application forms for, and particulars of the aforementioned posts may be obtained from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms : 5 P.M. on 12th December, 1950.

INVERNESS COUNTY COUNCIL. Applications invited from registered medical practitioners holding the D.P.H. or similar qualification for appointment of ASSISTANT MEDICAL OFFICER AND ASSISTANT SCHOOL MEDICAL OFFICER. Appointee will participate in all the work of the department as directed by the Medical Officer of Health. Experience in school health service and tuberculosis an advantage. Salary £735–£25–£935, with travelling and subsistence allowances at the County Council's rates. Post is superannuable.

Applications, with copies of 3 testimonials, should be lodged with undersigned within 10 days of appearance of this advertisement. R. WALLACE, County Clerk.

County Buildings, Inverness.

DONCASTER. COUNTY BOROUGH OF DONCASTER. Applications invited from registered medical practitioners for post of ASSISTANT MEDICAL OFFICER OF HEALTH (Male or Female) at a salary of £735 p.a., by annual increments of £25 to maximum of £935, which will be adjusted in accordance with the terms and conditions of the national scale which are now under review. Preference given to candidates possessing the D.P.H. or D.C.H. Appointee required to carry out, under the direction of the Medical Officer of Health, duties concerned mainly with the School Health and Maternity and Child Welfare Services. Post, which is superannuable under the National Health Service superannuation regulations or Local Government Superannuation Act, 1937, will be terminable by 1 month's notice on either side at any time, and successful candidate required to pass a medical examination.

Applications, giving age, and full particulars of experience and qualifications, with 3 recent testimonials or names and addresses of 3 referees, should be forwarded to the Medical Officer of Health, Wood-street, Doncaster, by 16th December, 1950. H. S. ESSENHIGH, Town Clerk.

Town Clerk's Office, 1, Priory-place, Doncaster.

ESSEX. COUNTY COUNCIL OF ESSEX. North East Essex Health Area. Applications invited from registered medical practitioners for appointment as ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH, for duties mainly in the Colchester area. Successful candidate required to undertake the duties of deputy to the Medical Officer of Health for the Borough of Colchester. Applicants should be experienced in school medical and maternity and child-welfare service work and should preferably possess the Diploma in Child Health and/or the Certificate or Diploma in Public Health. Remuneration on scale £750–£25–£950 a year, plus bonus. Point of entry to salary scale may be determined by experience.

Application forms available from Area Medical Officer, Area Office, Trinity-street, Colchester, and should be returned as soon as practicable. Canvassing is forbidden.

GLASGOW. CORPORATION OF GLASGOW. Health and Welfare Department. School Health Service. Applications invited from qualified medical practitioners for an appointment as a Whole-time ASSISTANT MEDICAL OFFICER in the Education Health Service. Experience in the ascertainment of mentally handicapped children and in child guidance work an advantage. Salary scale £750–£30–£900, but the scale is at present under review by the Corporation apart from the negotiations in the National Whitley Council for Medical Officers' salaries. Appointment is superannuable, and successful candidate will require to pass a medical examination.

Applications, stating age, qualifications, and full details of training and experience, with names of 3 referees, should be lodged with undersigned in an envelope marked "Appointment—Assistant Medical Officer, School Health Service," by 11th December, 1950. WILLIAM KERR, Town Clerk.

City Chambers, Glasgow, C.2.

LONDON COUNTY COUNCIL invites applications from registered medical practitioners who have been graded as consultants for appointment from 1st April, 1951, as CONSULTANT in Mental Health in the Public Health Department. Appointee will be required to advise on all matters relating to mental health except child guidance and mental deficiency matters, to undertake medical supervision of the work of the duly authorised officers and of the care and aftercare services for the mentally ill, and to give advice on individual cases. Remuneration at rate of 4 guineas a session of 1¼–2¼ hours, with the usual mileage allowance. Service will be required for not exceeding 100 sessions a year.

Further particulars are set out on the form of application which can be obtained from the Medical Officer of Health (PH/D.1), The County Hall, Westminster Bridge, S.E.1, and should be returned by 9th December, 1950. (1439.)

MINISTRY OF HEALTH. The Minister of Health invites application from registered medical practitioners having special interest in industrial or social medicine, for appointment as REGIONAL MEDICAL ADVISER to the Minister of Labour and National Service on questions of Resettlement in Employment of disabled persons under the Disabled Persons (Employment) Act, 1944. Duties will include advice on, and the oversight of the medical services in Vocational Training Centres and Industrial Rehabilitation Units, together with research into problems of the disabled in industry. The holder of this post will be required to give at least half-time to the work and to keep in touch with current trends in clinical medicine and medical opinion. Preference given to applicants holding an appointment in a teaching hospital or university. Appointment will be to the North-Western Region centred on Manchester, comprising the Counties of Cheshire and Lancashire and the High Peak district of Derbyshire. Salary £1000 p.a. In the first place, the appointment will be for a period not exceeding 3 years and will carry no rights of permanent employment.

Applications, giving date of birth, particulars of professional work, stating what hospital, university, or other appointments have been and are held, and making reference to any experience in industrial medicine, should be addressed to the Director of Establishments, Ministry of Health, Whitehall, S.W.1, and should be received by 15th December, 1950.

MIDDLESEX COUNTY COUNCIL. County Health Department. ASSISTANT MEDICAL OFFICER (whole-time) required initially in Area 2 (Southgate). Duties include care of mothers and young children, school health work, &c. Experience and D.P.H. or D.C.H. an advantage. Salary, Askwith, £675–£25–£875 p.a., plus temporary bonus (now £60 p.a.). Previous local authority service in similar capacity may determine commencing salary. Established, subject to medical examination.

Applications, stating age, qualifications, experience, names of 2 referees, to Joint Area Medical Officer, Town Hall, Palmers Green, N.13, by 16th December (quoting H.755.L.). Canvassing disqualifies.

C. W. RADCLIFFE, Clerk of the County Council.

KENT EDUCATION COMMITTEE. Applications invited for appointment of ASSISTANT COUNTY MEDICAL OFFICER in the "Excepted" District of Bexley. Salary scale £735 a year, with annual increments of £25 to £935 a year, but will be reviewed in light of any nationally negotiated scale. Commencing salary fixed at a point on scale according to experience and qualifications of successful candidate. Appointment is superannuable, and successful candidate will be required to pass a medical examination. Duties are mainly in the school health and child welfare services and experience in the classification of educationally subnormal children and in the examination of mental defectives an advantage.

Applications, stating age, qualifications, and experience, with names and addresses of 2 persons to whom reference may be made as to professional ability and character, should be addressed to the County Medical Officer, County Hall, Maidstone, by 7th December, 1950.

A. ELLIOTT, M.D., County and School Medical Officer.

County Hall, Maidstone, 8th November, 1950.

ST. HELENS. COUNTY BOROUGH OF ST. HELENS. Applications invited for appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Duties will include work in connection with all branches of the Public Health and Health Services and the day-to-day administration of the School Health Service. In the absence of the Medical Officer of Health appointee will take administrative control of the department. Candidates must have had experience in a public health department and possess the D.P.H. He should also be approved by the Ministry of Education for the purpose of ascertainment of mentally defective and physically handicapped children. Salary £951 p.a., by annual increments of £50 to maximum of £1051 p.a. Travelling expenses or a motor-car allowance in accordance with the Council's scale also payable. Appointment subject to provisions of National Health Service superannuation regulations and Local Government Superannuation Act, 1937. Consideration for housing accommodation given according to the circumstances of successful applicant.

Forms of application may be obtained from the Medical Officer of Health, Town Hall, St. Helens, and completed applications, with copies of 1–3 recent testimonials, should reach him by 11th December, 1950. Candidates must, when making application, disclose in writing whether to their knowledge they are related to any member of the Council or to a holder of any senior office under the Council. Canvassing members of the Council or Committees of the Corporation will be a disqualification. FRANK HAUXWELL, Medical Officer of Health.

Town Hall, St. Helens, 26th October, 1950.

NORWICH. CITY OF NORWICH. Applications invited from registered medical practitioners for whole-time appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER. Salary £735 p.a., rising by annual increments of £25 to £935 p.a., the commencing salary to be paid having regard to experience and qualifications.

Particulars can be obtained from undersigned and applications should be received by him by 9th December, 1950.

V. F. SOOTHILL, M.O.H. & S.M.O.

68, St. Giles'-street, Norwich.

NATIONAL COAL BOARD invite applications for the under-mentioned appointments:—

(i) CHIEF MEDICAL OFFICER. Duties involve advising on national policy in the development of the Mines Medical Service and on other policy matters involving the health of the workers; coördinating developments in the coalfields; collaborating with other departments involved in the organisation and coördination of research in matters of health and human problems; and supervising the general work of the Medical Branch at Headquarters. The Chief Medical Officer's headquarters are in London, but he is expected to visit the coalfields as occasion requires. Candidates should be men of seniority and standing in the profession with wide experience, especially in industrial health or allied fields. Salary by arrangement within range agreed for Consultants in the National Health Service. (Reference TT/269.)

(ii) PROFESSIONAL ASSISTANT to the Chief Medical Officer. Appointee will assist the Chief Medical Officer in the work of the medical branch at Headquarters (which includes certain duties in relation to the Kent coalfields). He will be located in London but he will be expected to visit the coalfields as occasion requires. Candidates should have experience of industrial medicine. Commencing salary will be not less than £1200 a year, up to £1600 depending on age and experience. (Reference TT/270.)

Apply in writing, giving full particulars (in chronological order) of age, education, professional qualifications, and experience (with dates), to National Coal Board, Establishments (Personnel), Hobart House, Grosvenor-place, London, S.W.1, marking envelope with the relevant T.T. reference number quoted above. Separate applications required for each post. Original testimonials should not be forwarded. Closing date 9th December, 1950.

NATIONAL COAL BOARD. East Midlands Division. Staff Vacancy No. 44. Applications invited from registered medical practitioners for a full-time post as a GROUP MEDICAL OFFICER in the East Midlands Division of the National Coal Board. Candidates should have a good clinical background, including some experience of general practice. Experience in the field of preventive and/or industrial medicine an advantage, as will a knowledge of the coal mining industry. Salary range is £1000–£1500 p.a. and point of entry will be according to qualifications and experience of successful applicant.

Applications, giving full particulars of age, qualifications, and experience, and 2 references, should be sent to the Secretary, National Coal Board, East Midlands Division, Sherwood Lodge, Arnold, near Nottingham, within 10 days of publication of this advertisement. Envelopes should be marked 'S.V.44.' Original testimonials should not be sent.

NATIONAL COAL BOARD. West Midlands Division. Applications invited from registered medical practitioners for full-time post of COLLIERY MEDICAL OFFICER to the Warwickshire Area. Duties will cover a group of Collieries and will include—(*a*) The treatment of accidents. (*b*) The medical examination of employees. (*c*) The supervision of the first-aid services. (*d*) The organisation of the training of first-aid personnel. (*e*) Supervision of the Morphia in Mines scheme. Preference given to candidates under 35 years of age with good clinical experience. Salary in accordance with qualifications and experience but commencing salary will not be less than £1200 p.a. Post is eligible for the Board's superannuation scheme.

Applications, giving full particulars of age, qualifications, and experience, with names of 3 referees, should be sent to the Divisional Medical Officer, National Coal Board, Himley Hall, Dudley, Worcs, within 14 days after appearance of this notice.

General Practice

For an Executive Council post apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

HAROLD HILL, ROMFORD, ESSEX. Applications invited for 2 VACANCIES (urban), one occurring in 3 months' time and the other in approximately 5 or 6 months. Not retirement or death vacancies. No list of patients in either case. Accommodation available. Apply on Form E.C.16A before 4th December, 1950, to—

W. A. CHAPMAN, Clerk, Essex Executive Council.
131/3, Fillebrooke-road, Leytonstone, E.11.

SOUTHBOROUGH, TUNBRIDGE WELLS, KENT. Applications invited for VACANCY (urban and rural). List at present approximately 1590. Residence and surgery not available. Apply on E.C.16A before 9th December, 1950, to—

W. HEWETSON, Clerk,
Kent and Canterbury Executive Council.
11, Station-road, Maidstone.

SOUTH SHIELDS. Applications invited for Vacancy (urban). List at present approximately 2100. Surgery available. Apply on E.C.16A before 11th December, 1950, to—

ALBERT WALLER, South Shields Executive Council.
2, Keppel-street, South Shields.

Miscellaneous

Wankie Colliery Company Limited. Applications invited for position of Senior Medical Officer at the Company's Collieries at Wankie, Southern Rhodesia. Applicants must have a higher medical diploma or degree and should have considerable experience of major surgery; knowledge of tropical medicine and hygiene desirable. The Senior Medical Officer will be in charge of the European and native hospitals and will be required to attend all European employees and their dependants either in their homes or in hospital. He will also be responsible for—

(*a*) Medical services to the railway community and private individuals living at Wankie.

(*b*) Medical services to the native community at both the Company's Collieries (some 4 miles apart).

(*c*) The supervision of general health and nutrition and the direction of the maintenance of healthy conditions throughout the Township, including in particular the general supervision of anti-malarial measures.

Salary £2350 p.a., plus cost-of-living allowance which at the present time would amount to £11 12s. for a married man and £5 16s. for a single man per month. No professional private practice fees will accrue. Free house, fuel, light, water, and sanitary services. 5 personal servants will be made available and rationed free of charge by the Company. The Senior Medical Officer will be required to supply his own car which will be maintained and lubricated free of charge. The Company will also make a petrol allowance. Leave: Casual 7 days p.a., Annual 30 days, Long (every 5 years) 90 days. Pension scheme.

Applications, stating age, qualifications, experience, and names of 3 persons to whom reference can be made, should be forwarded to the Secretary, Wankie Colliery Company Limited, 19, St. Swithin's-lane, London, E.C.4, so as to be received by 15th January, 1951.

West Africa. Locum Tenens required immediately for service with long-established Mining Company operating in Sierra Leone and Gold Coast. Appointment 8 months to a year. Possibility of long term employment on favourable terms. Salary for temporary appointment not less than £120 per month. First-class travelling expenses paid and free furnished bungalow accommodation in permanent self-contained camp. If married, wife could accompany appointee. Doctor would be in sole charge of small well-equipped hospital and of the medical care of the European and African personnel for a period of approximately 4 months in each colony. Number of Company employees in each case approximately 25 Europeans and 2000 Africans.—Apply, with full details experience, &c., to CONSOLIDATED AFRICAN SELECTION TRUST LIMITED, Mason's-avenue, Coleman-street, London, E.C.2.

Imperial Chemical Industries Limited has a departmental vacancy of a senior nature for a qualified Medical Practitioner in connection with the development of pharmaceutical products at home and overseas. Experience of clinical medicine both in hospital and general practice is essential and tropical experience would be preferred. Salary will be not less than £1000 p.a. according to age, qualifications, and experience; applicants of under 40 years of age being preferred.—Applications, with full particulars, should be addressed to Imperial Chemical (Pharmaceuticals) Limited, Office Service Department, Fulshaw Hall, Wilmslow, Manchester.

Medical Officer, Mining Company, Gold Coast. Applications invited from British graduates, under 40 years of age, for this appointment. Salary, commensurate with experience, between £900 and £1680 p.a. Newly qualified doctors will be considered.—Write, Box J.136, c/o STREET'S, 110, Old Broad-street, London, E.C.2.

Wythenshawe Estate. New Neighbourhood Unite House for Medical Practitioner. The Housing Committee invites applications for the tenancy of a house from qualified persons who are prepared to operate in the National Health Service scheme with a view to establishing a medical practice in the new Baguley area on the Wythenshawe Estate. It will not be permissible to use this house as a branch surgery and the successful applicant will be expected to live on the premises. The Committee is prepared to grant the tenancy of 1 parlour-type house with 3 or 4 bedrooms at an unsubsidised rental (31s. 11d. or 33s. 4d. per week, inclusive of rates) to the selected applicant for a period of 3 years. If within that time the applicant has completed negotiations with the City Surveyor for the lease of a plot of land on which to build a permanent residence and surgery, the tenancy may be extended for such period as is considered necessary. The selected applicant will be required to complete a tenancy agreement prepared by the Town Clerk.

Applications should be addressed to the Director of Housing, Town Hall, Manchester, 2, in an envelope endorsed "Doctor, Wythenshawe," and should be received by him not later than 23rd December, 1950. The Corporation does not bind itself to accept any applicant. PHILIP B. DINGLE, Town Clerk.

Town Hall, Manchester, 2, 16th November, 1950.

Northern Rhodesia. Applications invited for a post as a Medical Officer at Mufulira Copper Mines, Mufulira, Northern Rhodesia. The Company have 2 modern well-equipped hospitals—one European (48 Beds) and the other African (200 Beds), and 3 African clinics catering for a population of approximately 3000 Europeans and 30,000 Africans, respectively. Candidates should hold a British qualification and be experienced generally in medical work, but special experience and additional qualifications in one or more of the following would be an added recommendation: pædiatrics, obstetrics, and gynæcology. Successful applicant would be responsible to the Chief Medical Officer, and would be required to carry out general work in conformance with his instructions. The work would involve attendance at the European hospital and African hospital and African Clinics. Commencing salary from £1200 p.a., depending upon experience and qualifications, plus cost-of-living allowance (at present approximately £200 p.a.) and bonus (at present 47½% of basic salary). There is also a pension and life assurance scheme. Leave at 45 days p.a. may be accumulated over a maximum period of 3 years. Married accommodation would be available on engagement.—Write to: MUFULIRA COPPER MINES LIMITED, Selection Trust Building, Mason's-avenue, Coleman-street, London, E.C.2, for application form.

Bournemouth. Executrix has Medical Nursing-home for Sale. Large house, 17 rooms and usual offices. Good position and condition. Well furnished. Lease 93 years to run. Ground rent £42. Substantial profit. Also suitable for private residential hotel.—Write, Box A.E. 145, CENTRAL NEWS LTD., 17, Moorgate, London, E.C.2.

Park Square West, 30 yards from Harley-street. Suite of 3 rooms, to Let as Doctor's Consulting-rooms, &c. Rent, inclusive of rates, central heating, cleaning, &c.—Address, No. 479, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Nursing-home for Disposal as going concern. Modern building close to Harley-street. Very well furnished and equipped. 11 patients' rooms, ample staff accommodation, Operating-theatre and full-sized stretcher lift. Long lease.—Apply, C. E. BEDFORD & CO. LTD., 10, Wigmore-street, W.1 (LANgham 3927/8).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

Typewriting. Accurate speedy service. Testimonials, theses, notes.—HARRIS, 15, Arkwright Mansions, Finchley-road, N.W.3 (HAMpstead 7949).

Heidbrink Portable Anæsthetic Machine in unused condition seen London by appointment.—Address No. 483, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Apparatus for Disposal. Zeiss microscope, accessories, prism glasses, Morton ophthalmoscope, Grubler stains, osmic. State requirements.—B.M./ASF London, W.C.1.

Guineapigs, Rabbits of all types for Research. Prompt delivery, keen prices.—GOODCHILD'S, near Crawley, Sussex (Telephone: Poundhill 2167).

Large Earthworms, Meal Worms, &c., available through-out the year, 10s. per tin and upwards.—TRING ANGLING SUPPLIES, Research Supplies Department, Tring, Herts.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: M.O. LABORATORIES LTD., 24, Welbeck-way, London, W.1.

Statistical and Computing Service: Raw data of all types analysed by experts. Small sample techniques, tests of significance, &c. Data arranged for publication.—LANgham 1187.

Nursing-home equipment for Sale, comprising surgical beds, shadowless operating lamp, urns, sterilizers, drums, baby scales, &c.—Apply, LYNFIELD NURSING HOME, The Downs, Altrincham, Cheshire.

New Cars stay new if the upholstery is protected by loose covers.—Write or phone: CAR COVERALL, Department 9, 168, Regent-street, London, W.1 (REGent 1724–5).

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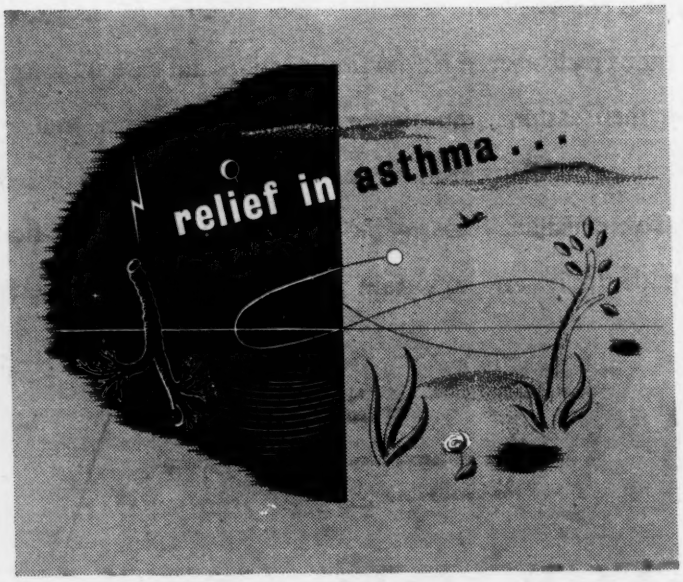

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